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A

# HANDBOOK

OF

# HOSPITAL PRACTICE

OR

AN INTRODUCTION

TO THE

PRACTICAL STUDY OF MEDICINE AT THE BEDSIDE.

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BY

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# HANDBOOK

# OF

# HOSPITAL PRACTICE.

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## INTRODUCTION.

Few persons, if any, have ever become skilful, self-reliant, and successful Practitioners in Medicine and Surgery who have not closely watched and recorded the phenomena of disease at the bedside during their student days in Hospital. Amongst the ablest physicians and surgeons, and with men of almost unlimited experience, it is common to hear reference to cases noted by them in hospital in the days of their own pupilage, and which have in a manner become the centre and the very keystone of their subsequent knowledge and skill. None would be found willing to part with this long-cherished experience, so vividly and indelibly impressed upon the mind; and no one that could anticipate and understand fully its value to him in after-life would neglect the opportunity which he possesses, in the few years of his hospital studentship, of laying by a store of it, in the only way in which it can be acquired, viz., by the personal superintendence, observation, and recording of some few select examples of the most important injuries and diseases.

All medical experience and authority are unanimous that Clinical or Bedside Study in an Hospital is indispensable to the formation of a sound and safe Practitioner; yet this truth, though now trite and commonplace in all mouths, is still barren of at least half which it practically imports. For clinical or bedside study implies something more than the half-curious, half-listless manner of *reconnoitring à la distance* a striking injury or unusual disease too often witnessed on the part of some students. To profit fully by hospital attendance requires much on the part of the student, and much on the part of his clinical teacher, the physician or surgeon on duty.

I am persuaded that in the majority of instances this is fully felt by students; but from the very nature of bedside observation in hospital, difficulties of no ordinary kind have to be surmounted at the very outset.

The various requirements which go to make up the practical physician and surgeon embrace a wide range of multifarious knowledge drawn from several sciences; of multifarious facts which can only be picked up one by one as occasion offers; and of technical skill in the use of various instruments and various physical appliances, to be mastered only in fragmentary, and often very unconnected, detail.

Generally speaking, years elapse before the student, however diligent, gets a good intelligible grasp of this apparently heterogeneous and unconnected assemblage of written and unwritten fragments of knowledge; facts with seemingly little or no relation to each other; and the manual and mental acquirements necessary to master and put them into practice.

Now, though experience shows it to be futile to endeavour to reduce the study of medicine to any strictly accurate or scientific *system*, I believe that the want of *some* method in the acquisition of our medical and surgical knowledge greatly enhances the difficulties we have to contend with, and unquestionably impedes our progress. And, indeed, I am confident, that if there be any one cause more than another which leaves so many students lamentably deficient in medical knowledge in the second, third, and even sometimes unfortunately in the last sessions of their hospital attendance, it is precisely the want of some methodised plan upon which to pursue their observations and inquiries at the bedside from the outset. It has therefore occurred to me, that it would be an invaluable acquisition to the student if a simple methodised plan of Clinical Observation could be framed, and combined in some convenient form, with brief, but explicit, instructions as to the best mode of procedure for investigating any given case, arriving at a diagnosis, and recording its history, symptoms, treatment, daily progress, and termination. It seemed to me that a small work of this nature would prove a most useful companion to the student at the bedside. I also conceived, that if at the same time it contained in condensed, yet intelligible and readily accessible form, a compendium of the preliminary knowledge most essential for rightly interpreting and using the information thus acquired and recorded by the student, it would be of infinite service by preparing him to profit by the more advanced teachings of the clinical physicians and surgeons, much of which is now lost, to the junior students especially, by reason of their not having the necessary preliminary information. Few clinical teachers are not sensible of the loss of time to themselves and the class entailed by the want of the requisite elementary knowledge on the part of many students to enable them to profit by what they see and hear at the bedside.

It is with a view to endeavour to supply these wants that the present "INTRODUCTION TO HOSPITAL PRACTICE" has been written. Without farther preface I shall introduce the student to the practical consideration of disease.

In a work of this kind, comprising multitudinous details, necessarily much condensed to admit of their being brought within a narrow compass, it is almost impossible that errors and omissions, and perhaps important ones, should not exist in a first edition. I am sensible of many such imperfections in these pages, for which I crave the kind indulgence of my readers.

# SECTION I.

## DIRECTIONS FOR CLINICAL EXAMINATIONS OF PATIENTS.

§ 1. The "ills which flesh is heir to," and which fall within the domain of the physician and the surgeon, are very numerous and of great variety. It will be well at the outset to place before the student a tabular view of the diseases the human frame is liable to. It will serve, as it were, for a skeleton map of the countries he is about to explore. I have adopted the system of nosology or classification of disease proposed by Dr. William Farre, and employed in the registration of deaths in England under his able superintendence. I conceive it to be at once simple, comprehensive, and, with but little exception, satisfactory in detail. It is now in general use in England, has been approved of in France and Belgium, and has been accepted, with slight modifications, by a congress of scientific men assembled at Vienna; and it is highly probable that a nomenclature substantially the same will ere long be adopted in many of the chief states of Europe. As I have reason to believe that its speedy adoption by the medical department of the British army is contemplated, it is of great consequence that students designing themselves for the public service in these countries, should take the earliest opportunities of becoming familiar with its use.*

---

* The tables here given are partly taken from the able "Handbook of the Science and Practice of Medicine," by my friend and former colleague in the East, Dr. Wm. Aitken; they have been compared with forms kindly furnished to me by Dr. Farre for other purposes.

## *Diseases in Classes and Orders.*

### CLASS I.

ZYMOTIC DISEASES.—*Zymotici* (ζύμη, leaven). Diseases that are either epidemic, endemic or contagious; induced by some specific body, or by the want of food, or by its quality. In this class there are four orders of diseases, namely:—

| | | |
|---|---|---|
| ORDER | 1.—MIASMATIC DISEASES . . . | *Miasmatici* (μίασμα, stain, defilement). |
| " | 2.—ENTHETIC DISEASES . . . . | *Enthetici* (ἔνθετος, put in, implanted). |
| " | 3.—DIETETIC DISEASES . . . . | *Dietetici* (δίαιτα, way of life, diet). |
| " | 4.—PARASITIC DISEASES . . . | *Parasitici* (παράσιτος, parasite). |

### CLASS II.

CONSTITUTIONAL DISEASES.—*Cachectici* (καχεξία, bad habit of body), sporadic diseases; affecting several organs in which new morbid products are often deposited; sometimes hereditary.

| | | |
|---|---|---|
| ORDER | 1.—DIATHETIC DISEASES . | *Diathetici* (διάθεσις, condition, diathesis). |
| " | 2.—TUBERCULAR DISEASES | *Phthisici* (φθίσις, wasting away). |

### CLASS III.

LOCAL DISEASES.—*Monorganici* (μόνος, alone, without others; ὄργανον, organ), sporadic diseases in which the functions of particular organs or systems are disturbed or obliterated, with or without inflammation; sometimes hereditary.

| | | |
|---|---|---|
| ORDER | 1.—BRAIN DISEASES . . | *Cephalici* (κεφαλὴ, head). |
| " | 2.—HEART DISEASES . . | *Cardiaci* (καρδία, heart). |
| " | 3.—LUNG DISEASES . . | *Pneumonici* (πνεύμων, lung). |
| " | 4.—BOWEL DISEASES . . | *Enterici* (ἔντερον, intestine). |
| " | 5.—KIDNEY DISEASES . . | *Nephritici* (νεφρὸς, kidney). |
| " | 6.—GENNETIC DISEASES . | *Aidoici* (αἰδοῖα, pudenda). |
| " | 7.—BONE AND MUSCLE DISEASES . . . | *Myostici* μῦς, muscle; ὀστέον, bone). |
| " | 8.—SKIN DISEASES . . | *Chrotici* (χρὼς, skin). |

### CLASS IV.

DEVELOPMENTAL DISEASES.—*Metamorphici* (μεταμόρφωσις, change of form); special diseases, the incidental result of the formative, reproductive, and nutritive powers.

| | | |
|---|---|---|
| ORDER | 1.—DEVELOPMENTAL DISEASES OF CHILDREN | *Paidici* (παιδίο, youth). |
| " | 2.—DEVELOPMENTAL DISEASES OF WOMEN . | *Gyniaci* (γυνὴ, woman). |

| | |
|---|---|
| ORDER 3.—DEVELOPMENTAL DISEASES OF OLD PEOPLE . . . . . . | *Geratici* (γῆρας, old age). |
| " 4.—DISEASES OF NUTRITION . . . | . *Atrophici* (ἀτροφία, atrophy). |

## *Tabular View of the Classes, Orders, and Special Nomenclature of Diseases.*

### CLASS I.—ZYMOTIC DISEASES.—*Zymotici.*

### ORDER 1.—MIASMATIC DISEASES.—*Miasmatici.*

| **English Names.** | **Latin Names.** |
|---|---|
| Small Pox . | *Variola.* |
| Varioloid . . | *Varioloides.* |
| Chicken Pox . | *Varicella.* |
| Miliaria . . | *Miliaria.* |
| Measles . . | *Morbilli.* |
| Scarlatina . | *Scarlatina.* |
| Diphtheria . | *Diphtheria.* |
| Mumps . . | *Parotia.* |
| Croup . . | *Trachealia.* |
| Whooping Cough | *Pertussis.* |
| Continued Fever | *Febris Continua.* |
| Relapsing Fever | *Febris Recurrens.* |
| Typhus Fever . | *Typhus.* |
| Typhoid Fever . | *Febris Typhoides.* |
| Erysipelas . | *Erysipelas.* |
| Erythema . | *Erythema.* |
| Hospital Gangrene | *Gangræna Nosocomialis.* |
| Pyemia . . | *Pyemia.* |
| Metria . . | *Febris Puerperarum.* |
| The Plague . | *Pestis.* |
| Hybrid of Measles and Scarlet Fever. | *Rubeola.* |
| Dengue . . | *Scarlatina Rheumatica.* |
| Quinsy . . | *Tonsilia.* |
| Carbuncle . | *Anthrax.* |
| Boil . . | *Furunculus.* |
| Influenza . . | *Influenza.* |
| Dysentery . | *Dysenteria.* |
| Diarrhœa . | *Diarrhœa.* |
| Cholera . . | *Cholera.* |
| Yellow Fever . | *Typhus Icterodes.* |
| Remittent Fever, Crimean Fever | *Febris Remittens.* |
| Hong-Kong Fever, &c., &c. | *Febris Tropicorum.* |
| Ague . . | *Febris Intermittens.* |
| Rheumatism . | *Rheumatismus Acutus*, vel *Febris Rheumatica.* |

### ORDER 2.—ENTHETIC DISEASES.—*Enthetici.*

| | |
|---|---|
| Syphilis (Primary). | *Syphilis Primarius.* |
| Syphilis (Secondary). | *Syphilis* (*Secondarius*). |
| Gonorrhœa . | *Gonorrhœa.* |
| Leprosy . . | *Lepra.* |
| (Including Greek Elephantiasis, or the Leprosy of Moses.) | |
| Yaws . . | *Frambœsia.* |
| Pellagra . . | *Pellagra.* |
| Radesyge . | *Radesyge.* |
| Purulent Ophthalmia | *Ophthalmia Purulenta.* |
| Glanders . . | *Equinia.* |
| Hydrophobia . | *Rabies.* |
| Necusia . . | *Necusia.* |
| Malignant Pustule. | *Pustula Maligna.* |

### ORDER 3.—DIETETIC DISEASES.—*Dietetici.*

| English Names. | Latin Names. | English Names. | Latin Names. |
|---|---|---|---|
| Famine Fever | *Febris à Fame.* | Alcoholism, including Intemperance, Delirium Tremens, and Catacausis | *Alcoholismus.* |
| Scurvy | *Scorbutus.* | | |
| Purpura | *Purpura.* | | |
| Rickets | *Rachitis.* | | |
| Bronchocele | *Bronchocele.* | | |
| Cretinism | *Cretinismus.* | | |

### ORDER 4.—PARASITIC DISEASES.—*Parasitici.*

| | | | |
|---|---|---|---|
| Thrush | *Aphtha.* | Tape Worm | *Tænia Solium.* |
| Porrigo | *Porrigo.* | Strongilus Gigas | *Strongilus Gigas.* |
| Scabies | *Scabies.* | Round Worm | *Ascaris Lumbricoides.* |
| Phthiriasis | *Morbus Pedicularis.* | Thread Worm | *Ascaris Vermicularis.* |
| Worms | *Vermes.* | Guinea Worm | *Dracunculus.* |
| Hydatids | *Acephalocystis, Echinococcus Hominis.* | | |

## CLASS II.—CONSTITUTIONAL DISEASES.—*Cachectici.*

### ORDER 1.—DIATHETIC DISEASES.—*Diathetici.*

| | | | |
|---|---|---|---|
| Gout | *Podagra.* | Cancer, Epithelial and Sweeps' | *Carcinoma, Epithelioma.* |
| Anæmia | *Anœmia.* | Melanosis | *Melanosis.* |
| Dropsy | *Hydrops.* | Lupus | *Lupus.* |
| Cancer | *Carcinoma.* | Canker | *Gangrena.* |
| Soft | *Encephaloides.* | Mortification | *Noma.* |
| Colloid | *Alveolare.* | Dry Gangrene | *Gangrena Senilis.* |
| Osteoid | *Osteoides.* | | |
| Schirrous | *Schirrhoma.* | | |

### ORDER 2.—TUBERCULAR DISEASES.—*Phthisici.*

| | | | |
|---|---|---|---|
| Scrofula | *Scrofula.* | Phthisis | *Phthisis.* |
| Tuberculosis, mesenteric. | *Tuberculosis Mesenterica.* | Hydrocephalus, | *Hydrocephalus.* |
| Tubercular Peritonitis | *Peritonitis Tuberculosa.* | (With Tubercular deposit) | *Meningia Tuberculosa.* |

## CLASS III.—LOCAL DISEASES.—*Monorganici.*

### ORDER 1.—BRAIN DISEASES.—*Cephalici.*

| | | | |
|---|---|---|---|
| Meningitis | *Meningitis.* | Mania | *Mania.* |
| Encephalitis | *Encephalitis.* | Monomania | *Monomania.* |
| Cephalitis | *Cephalitis.* | Dementia | *Dementia.* |
| Myelitis | *Myelitis.* | Epilepsy | *Epilepsia.* |
| Apoplexy | *Apoplexia.* | Hysteria | *Hysteria.* |
| Paralysis | *Paralysis.* | Tetanus | *Tetanus.* |
| Shaking Palsy | *Paralysis Agitans.* | Convulsions | *Convulsio.* |
| | | Laryngismus | *Laryngismus.* |
| Chorea | *Chorea.* | Neuralgia, Tic Douloureux. | *Neuralgia.* |
| Delirium Tremens | *Delirium Tremens.* | Neuroma | *Neuroma.* |

### Order II.—Heart Diseases.—*Cardiaci.*

| English Names. | Latin Names. | English Names. | Latin Names. |
|---|---|---|---|
| Carditis | *Carditis.* | Aneurism of the Heart | *Aneurisma Cordis.* |
| Pericarditis | *Pericarditis.* | Aneurism of the Aorta, &c. | *Aneurisma Aortæ.* |
| Endocarditis | *Endocarditis.* | Angina Pectoris | *Angina Pectoris.* |
| Disease of Heart Valves. | *Morbus Cordis Valvularum.* | Fainting | *Syncope.* |
| Heart Hypertrophy. | *Hypertrophia Cordis.* | Arteritis | *Arteritis.* |
| Atrophy | *Atrophia Cordis.* | Atheroma | *Atheroma.* |
| Fatty Degeneration | *Cordis Degeneratio.* | Phlebitis | *Phlebitis.* |
| | | Varicose Veins | *Varix.* |

### Order III.—Lung Diseases.—*Pneumonici.*

| English Names. | Latin Names. | English Names. | Latin Names. |
|---|---|---|---|
| Hæmoptysis | *Hæmoptysis.* | Pneumonia | *Pneumonia.* |
| Laryngitis | *Laryngitis.* | Pleuro-Pneumonitis | *Pleuro-Pneumonitis.* |
| Œdema of the Glottis | *Œdema Glottidis.* | Asthma | *Asthma.* |
| Laryngismus Stridulus | *Laryngismus Stridulus.* | Emphysema of Lungs | *Emphysema.* |
| Bronchitis | *Bronchitis.* | Grinders' Asthma | *Asthma.* |
| Pleurisy | *Pleuritis.* | Miners' Asthma<br>Colliers' Asthma<br>Spurious Melanosis. | *Asthma Metallicorum.* |
| Hydrothorax | *Hydrothorax.* | | |
| Empyema | *Empyema.* | | |
| Pneumothorax | *Pneumothorax.* | | |
| Apoplexy of Lungs | *Apoplexia Pulmonalis.* | | |

### Order II.—Bowel Diseases.—*Enterici.*

| English Names. | Latin Names. | English Names. | Latin Names. |
|---|---|---|---|
| Glossitis | *Glossitis.* | Hæmatemesis | *Hæmatemesis.* |
| Stomatitis | *Stomatitis.* | Melæna | *Melæna.* |
| Pharyngitis | *Pharyngitis.* | Supra-renal Melasma | *Morbus Addisonii* |
| Œsophagitis | *Œsophagitis.* | Pancreatic Disease | *Morbus Pancreaticus.* |
| Gastritis | *Gastritis.* | Splenitis | *Splenitis.* |
| Enteritis | *Enteritis.* | Hepatitis | *Hepatitis.* |
| Peritonitis | *Peritonitis.* | Jaundice | *Icterus.* |
| Ileus | *Ileus.* | Gallstones | *Chololithus.* |
| (Constipation) | (*Constipatio.*) | Cirrhosis | *Cirrhosis.* |
| Intussusception | *Intussusceptio.* | Ascites | *Ascites.* |
| Dyspepsia | *Dyspepsia.* | | |
| Pyrosis | *Pyrosis.* | | |
| Gastralgia | *Gastralgia.* | | |

### Order V.—Kidney Diseases.—*Nephritici.*

| English Names. | Latin Names. | English Names. | Latin Names. |
|---|---|---|---|
| Nephritis | *Nephritis.* | Diabetes | *Diabetes.* |
| Ischuria | *Ischuria.* | Stone<br>Gravel | *Calculus Vesicæ,* vel *Renalis.* |
| Diuresis | *Diuresis.* | Hæmaturia | *Hæmaturia.* |
| Nephria<br>(Bright's Disease)<br>Albuminuria | *Nephria.* | Cystitis | Cystitis. |

### ORDER VI.—GENNETIC DISEASES.—*Gennetici.*

| English Names. | Latin Names. | English Names. | Latin Names. |
|---|---|---|---|
| Varicocele | *Varicocele.* | (Uterine Tumour) | (*Tumor Uteri.*) |
| Orchitis | *Orchitis.* | Ovarian Dropsy | *Hydrops Ovarii.* |
| Hydrocele | *Hydrocele.* | (Ovarian Tumour) | (*Tumor Ovarii.*) |
| Hysteritis | *Hysteritis.* | | |

### ORDER VII.—BONE AND MUSCLE DISEASES.—*Myostici.*

| | | | |
|---|---|---|---|
| Synovitis | *Synovitis.* | Caries | *Caries.* |
| Ostitis | *Ostitis.* | Necrosis | *Necrosis.* |
| Exostitis | *Exostitis.* | Muscular Atrophy or Degeneration | *Atrophia*, vel *Degeneratio Musculorum.* |
| Brittle Bones | *Fragilitas Ossium.* | | |
| Soft Bones | *Mollities Ossium.* | | |
| Curvature of Spine | *Curvatura Spinæ.* | | |

### ORDER VIII.—SKIN DISEASES.—*Chrotici.*

| | | | |
|---|---|---|---|
| Roseola | *Roseola.* | Mentagra | *Mentagra.* |
| Urticaria | *Urticaria.* | Lichen | *Lichen.* |
| Eczema | *Eczema.* | Prurigo | *Prurigo.* |
| Herpes | *Herpes.* | Psoriasis | *Psoriasis.* |
| Pemphigus. | *Pemphigus.* | Pityriasis | *Pityriasis.* |
| Rupia | *Rupia.* | Ichthyosis | *Ichthyosis.* |
| Ecthyma | *Ecthyma.* | Phlegmon | *Phlegmon.* |
| Impetigo | *Impetigo.* | Whitlow | *Paronychia.* |
| Acne | *Acne.* | | |

## CLASS IV.—DEVELOPMENTAL DISEASES.—*Metamorphici.*

| | | | |
|---|---|---|---|
| Stillborn | *Natus Mortuus.* | Spina Bifida | *Spina Bifida.* |
| Premature Birth | *Prematurus Natus.* | Imperforate Anus | *Anus Imperforatus.* |
| Atelectasis | *Atelectasis Pulmonum.* | Idiocy | *Fatuitas.* |
| Malformations | *Vitia Conformationis.* | Congenital Deaf-Dumbness. | *Mutitas.* |
| Cyanosis | *Cyanosis.* | Teething | *Dentitio.* |

### ORDER 2.—DEVELOPMENTAL DISEASES OF WOMEN, CHIEFLY IN THE REPRODUCTIVE AGE.—*Gyniaci.*

Chlorosis . . . . . . . . . . *Chlorosis.*

Childbirth, Miscarriage, Abortion . . . . *Partus, Abortus.*

(Including death from "Pelvis deformed, rupture of uterus, extra-uterine fœtation, flooding, puerperal mania, puerperal convulsions, syncope, hysteritis, breast abscess.")

Paramenia . . . . . . . . . *Paramenia.*

(Including "Amenorrhœa, leucorrhœa.")

### ORDER 3.—DEVELOPMENTAL DISEASES OF OLD PEOPLE.—*Geratici.*

Old Age . . . . . . . . . *Senectus.*

Order 4.—Diseases of Nutrition.—*Atrophia.*

Atrophy, Debility (includes premature old age) . *Atrophia, Asthenia.*

§ 2. The following classification of Fevers will be found a simple and convenient one for the practical record of cases in hospital.

### I.—Primary Fevers.

(*a.*) Continued Fever:
- *Synocha*, or Inflammatory Fever.
- *Synochus*, or Mixed or Nervous Fever.
- *Typhus*, or Adynamic Fever, Spotted or Irish Fever.
- *Typhoid*, or Enteric Fever.

(*b.*) Intermittent Fever or Ague:—
- *Quotidian.*
- *Tertian.*
- *Quartan.*

(*c.*) Remittent Fever:—
- *Marsh Remittent, Paludal Fever*, comprising Bilious Remittent, and Yellow Fever.

### II.—Irritative Fevers.

*Gastric Fever.*
*Gastro-Intestinal Remittent.*
*Hectic Fever.*

### III.—Eruptive Fevers.

*Variola*, Small Pox.
*Rubeola*, Measles.
*Scarlatina*, Scarlatina.

§ 3. The next Table contains a useful summary of the Classes and Orders of Skin Diseases on a plan derived from the systems of Willan, Bateman, and Biot.

1. Exanthemata.
    - Rubeola.*
    - Scarlatina.*
    - Erythema.
    - Erysipelas.
    - Roseola.
    - Urticaria.
2. Vesiculæ.
    - Eczema.
    - Herpes.
    - Scabies.
    - Miliaria.
    - Varicella.
3. Bullæ (?).
    - Pemphigus.
    - Rupia.
4. Pustulæ.
    - Variola.*
    - Vaccinia.*
    - Ecthyma.
    - Impetigo.
    - Acne.
    - Mentagra.
    - Porrigo.
    - Equinia.
5. Papulæ.
    - Lichen.
    - Prurigo.
6. Squamæ.
    - Psoriasis.
    - Pityriasis.
    - Ichthyosis.

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* These diseases belong more properly to the class of Eruptive Fevers.

7. Tuberculæ.
    - Lepra Tuberculosa.
    - Lupus.
    - Molluscum.
    - Frambæsia (raspberry-like tubercles).
    - Keloid.

8. Maculæ.
    - Lentigo (Freckle).
    - Ephelides (Liver-spot).
    - Nævi.
    - Vitiligo.

9. Purpura.

10. Pellagra (red patches, Pellagrosi of Milan).

11. Radesyge (Spedalsked, Lepra Norveg.).

12. Lepra Astrachanica (blackish tubercles).

13. Malum Alepporum (ulcerating tubercles).

14. Elephantiasis Arabica.

15. Syphilida.

16. Dermatophyta.

§ 4. The student will do well to commit to memory the names of the Classes and Orders of this nomenclature, mastering the significations of the terms and the roots from which they are derived. I here repeat the Classes and Orders in a condensed form, for convenience of reference :—

Class I.—Zymotic Diseases.—Zymotici.

| | |
|---|---|
| Order 1.—Miasmatic Diseases | *Miasmatici.* |
| " 2.—Enthetic (implanted) Diseases | *Enthetici.* |
| " 3.—Dietetic Diseases | *Dietetici.* |
| " 4.—Parasitic Diseases | *Parasitici.* |

Class II.—Constitutional Diseases.—Cachectici (Sporadic Diseases, affecting several organs, in which new morbid products are often deposited; sometimes hereditary).

| | |
|---|---|
| Order 1.—Diathetic Diseases | *Diathetici.* |
| " 2.—Tubercular Diseases | *Phthisici.* |

Class III.—Local Diseases.—Monorganici.

| | |
|---|---|
| Order 1.—Brain Diseases | *Cephalici.* |
| " 2.—Heart Diseases | *Cardiaci.* |
| " 3.—Lung Diseases | *Pneumonici.* |
| " 4.—Bowel Diseases | *Enterici.* |
| " 5.—Kidney Diseases | *Nephritici.* |
| " 6.—Gennetic Diseases | *Aidoici.* |
| " 7.—Bone and Muscle Diseases | *Myostici.* |
| " 8.—Skin Diseases | *Chrotici.* |

CLASS IV.—DEVELOPMENTAL DISEASES.—METAMORPHICI.

| | | | |
|---|---|---|---|
| Order 1.— | Developmental Diseases of | Children | *Paidici.* |
| " 2.— | " " | Women | *Gyniaci.* |
| " 3.— | " " | Old People | *Geratici.* |
| " 4.— | Diseases of Nutrition | Hypertrophies | *Hypertrophici.* |
| | | Atrophies. | *Atrophici.* |

It will be very useful to commit this table to memory, and to endeavour now and then to reduce to their proper place, under Specific Class and Order, the various diseases met with in hospital practice.

## PRELIMINARY EXAMINATION OF PATIENT.

§ 5. We will now suppose the student to approach for the first time the bedside of a patient in hospital; and here let me quote from the words of Professor Bennett, and entreat you to grave them on your memory;—"It should never be forgotten," says this excellent teacher, "that you are examining a fellow-creature who possesses the same sensitiveness to pain and the same feelings as you do, and that everything that can increase the one or wound the other should be most carefully avoided. Prudence, kindness, and delicacy, are especially enjoined upon those who treat the sick." I cite this passage for you, endorsing it with my strongest commendation; and, indeed, with the conviction that its principles will be ever present to your mind. I will only add to it this advice: Be careful how you speak of the patient's disease in his or her presence; avoid specifying, except in technical language, the nature and seat of the malady. If it be necessary to reveal it to the patient, it is the duty of the clinical physician to do so.

As you stand by the bedside of disease, much is to be learned by the careful exercise of your senses of sight, hearing, smell, and touch, before you address a single interrogatory to the patient, or learn aught from him orally. You should practise yourselves frequently in the exercise of these faculties, for there are many occasions in which you will have to rely on them, and on them alone, for information to guide you in determining the state of the patient, and the mode of treatment suitable to his case (*e.g.* in cases of fever when the sensorium is affected, and the powers of reason are suspended; in the diseases of lunatics and idiots, and in certain cases of disease in criminals; and in persons either feigning (malingering), or attempting to conceal disease).

§ 6. *General Condition of the Patient.*—The personal and moral state of the patient cannot fail to strike you at the moment of first beholding him; you will observe whether he be quick and intelligent, dull, stupid, or lethargic; bright, cheerful, and sociable, or sullen and morose, melancholy and desponding; whether docile and tractable, or violent and unmanageable, and requiring restraint; whether under the influence of temporary excitement from drink or other causes; whether "queer," wandering, or delirious, or calm, collected, and in possession of all his faculties; whether "floccitatio," picking of the bedclothes, be observable; whether he be squalid and wretched, or well nourished and in good condition. All these and many other particulars will offer themselves to your eye at a glance, and many useful indications will be gained from a consideration of them, though it will be by no means necessary to make any special record of them in your Case Forms, except under peculiar circumstances.

§ 7. *Decubitus.*—Observe the position in which the patient lies in bed, technically termed *the mode of decubitus* (see this word in the Glossary, and refer to the same quarter for exact information on any term used in this book; many other words, also, will be found there); remark whether the decubitus be on the back or on the side, intermediate, on the face, or otherwise. If a particular mode of decubitus seem to be observed by the patient habitually, record it accurately under the heading "Decubitus," in the Case Forms herewith furnished. The position of the head, shoulders, trunk, and limbs, must be separately but rapidly surveyed. Remark, for example, whether the head lies low, or is dependent; whether the patient lies prostrate and motionless, flat on the back (perfectly supine), or on the face (prone); whether the limbs are lying outstretched, flaccid, and relaxed, or drawn up, contracted, and fixed in any particular attitude; it will be seen at once whether the position assumed is that of nervous exhaustion, muscular inaction, and general debility and prostration, or, on the other hand, whether as the result of pain, spasm, or general suffering, the patient has placed himself in some posture unusual in health, and maintained at the expense of muscular exertion in one part, to relieve another from pressure, or to reduce the natural movements to as nearly stationary a condition as possible. The decubitus is often very characteristic in fevers, in peritonitis, and in pleuritis and pericarditis.

§ 8. *Face.*—Remark whether the face be generally flushed or pale, or present a localised flush on the malar bones (as in phthisis and pneumonia); whether it be of a dusky brown, cyanosed, livid or florid, full and plump, pulpy and swollen, or emaciated and sunken, perspiring or dry, hot or cold; whether the eyes are injected and suffused, full, prominent, bloodshot, lustrous, fiery or ferrety, or sunken, dull, and glassy; whether bluish, yellowish, or of natural white colour; whether the gaze be direct, intelligent, and firm, or wild, restless, and excited, or dull, listless, and vacant. Observe particularly the brows, whether contracted and marked with vertical sulci in the interval over the root of the nose; the alæ of the nose, whether natural, dilating sensibly with each inspiratory and expiratory effort, or "pinched" and contracted; note if the curved lines from the angles of the nose to the corners of the mouth are marked by the action of the zygomatics; note the angles of the mouth, whether drawn down or up; whether this aperture is listlessly open, or pursed up and contracted. If the lips, teeth, gums, and tongue are visible, note whether they are natural in appearance, or covered with creamy, or dirty brownish matter (sordes). Observe the general expression of the features, whether it be calm, conscious, rational, and collected, or nervous and apprehensive, or indicative of pain or inward suffering; whether vacant, idiotic, dreamy, or unconscious, or wild, excited, or delirious. Certain expressions of the face are highly characteristic and almost unerringly diagnostic of certain diseases; *e.g.* the half-livid, half-dusky brownish tint, with prostrate, listless, sunken aspect so characteristic of low fever; the leaden, pinched, shrunken, worn, conscious and apprehensive countenance so often witnessed in connexion with peritonitis. The more extreme condition of this latter expression, combined with a peculiar and indescribable eye, as if remote, turned inwards upon the individual's mind, and abstracted from surrounding objects, constitutes the Facies Hippocratica of the old authors. It is not possible to convey an intelligible idea of it by description in words, but once seen it is never forgotten by the retentive mind; and its indications, as a prognostic, are invaluable; it is often the sure indicator to the experienced medical eye, of approaching dissolution, when bystanders are insensible of the patient's danger. You must see it to take it in mentally; and once seized, retain it.

§ 9. *Breathing.*—Note whether the patient be breathing noiselessly and naturally (about sixteen inspirations per minute, full, slow, uniform, and calm); or whether his respiration be quick, hurried, short, interrupted, or irregular, and as if painful and incomplete. Whether he breathes by the nose with snoring noise (stertor), or by the mouth, or by both, and whether cough, wheezing, gurgling, or any other unusual sign be audible as you stand by the bedside. Remark whether the breath be foul or fetid, excessively moist, or whether sensible vapour is formed just outside the mouth at the close of the expiratory effort. Also observe whether the cough, if any, is attended by expectoration.

§ 10. *Cutaneous surface.*—Remark, as before, whether the integuments of the face be red or pale, hot and flushed, or cold, moist and perspiring, or dry, or bedewed with cold, clammy sweat; repeat the same observations on the integuments of the neck, shoulders, chest, abdomen, and extremities; *never* omit to satisfy yourself by ocular inspection of the corresponding states of the hands and feet, the latter in particular. Observe whether the surface be of a very slight rosy, reddish tint, disappearing momentarily on pressure, or congested, cyanosed, livid. Note whether the skin be soft, supple and pliant, or harsh, dry, furfuraceous (branny, throwing off scales like particles of bran), or contracted, wrinkled, shrivelled, hard, coarse, as if granular, sensibly cold to the feel, and presenting the appearance known as "cutis anserina," goose-skin; observe particularly the backs of the hands and fingers, the pulps of the fingers, and the similar parts of the feet.

§ 11. *Temperature.*—Place the palm of the hand gently on the surface of the chest, the abdomen, on the cheeks, or in the axillæ; remark the sensations conveyed (your own hand having been previously naturally and comfortably warm), whether the surface feels natural or cold, clammy, very cold (stone cold), or warm, hot, or hot and dry, and whether a peculiar sense of drying or biting heat (calor mordax) be communicated to your hand. Place a small thermometer in the axillæ, under the tongue, or in the anus, allow it to remain for two or three minutes, and note the temperature; the natural standard is about 98° Fahr., but the thermometer in the axillæ may sink to 96° Fahr., or it may reach 100°, 102°, 104°, or 105°; that is (in extreme cases) an elevation of 7° above the healthy standard.*

The thermometer is rarely below 98° Fahr. except in the algid forms of cholera and yellow fever, in the rigors or shiverings premonitory to ordinary febrile or inflammatory states. Though cold is complained of by the patient, and the sensation to the hand is that of coldness in external and exposed parts, the thermometer will be found, if placed in the mouth, axillæ, or anus, to indicate an increase of the animal temperature in all pyrexial states.

In this preliminary examination we take no note of more special states of the skin,—as to the presence or absence of eruptions, &c., &c.

§ 12. *Phenomena detected by Sense of Smell.*—The physician's nose is a valuable diagnostic agent; do not, therefore, deprive yourselves of its assistance by becoming snuff-takers. Fever, and even several of its varieties, also small-pox, arthritis or rheumatic fever, phthisis, gangrene of the lung, or of other parts, and some other diseases may be readily and indeed positively diagnosed in the great majority of cases when you approach within a limited distance of the bedside, and sometimes almost on entering the ward where a patient in any of the above-named diseases lies. The distinctive characters of the odours presented are only to be learned by familiarising yourselves with their peculiarities at the bedside; they are not to be conveyed in words, and as it would be only wasting the student's time and my own by attempting to describe them, I will dismiss this subject with a strong recommendation to every student to pay special attention to the cultivation of his faculty of smell, as well as of all his other faculties and senses whereby the so-called *organoleptic* phenomena of disease may be readily appreciated.

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* See the Author's Report (Blue-Book) on the Yellow Fever Epidemic of Lisbon, 1857.

§ 13. *Pulse.*—If the pulp of the index, middle, and ring fingers of the right or left hand be lightly but steadily placed over the course of the radial artery in the wrist, the quickness, force, and volume of the pulse may be duly estimated. The natural pulse varies very much in different individuals at different periods of life, and somewhat in the two sexes. The following table will be useful for reference:—

Pulse Rates at different Periods of Life.

| Age. | | | Age. | | |
|---|---|---|---|---|---|
| In the embryo | 130 to 150 | (Müller.) | Seven years . | 72 to 90 | (Müller.) |
| At birth . | 120 | " | Twelve years | 70 " — | " |
| One month | 120 | " | Puberty . | 80 " 85 | " |
| One year . | 120 " 130 | " | Adult Age . | 70 " 75 | " |
| Two years | 90 " 115 | " | Old Age . | 60 " 65 | " |
| Three years | 80 " 100 | " | | | |

§ 14. It will take the student some hours of study to make himself thoroughly master of the practical application of the foregoing details. To follow them in order when observing the phenomena presented in the first few cases which he examines will consume some half hour of his time for each at the outset; but if he have the courage and patience to exercise his brains and faculties systematically, and on a definite plan at the commencement of his clinical studies, he will soon find himself able to make a complete and satisfactory preliminary survey of every case brought before him *in less than one minute.* Such a preliminary survey will be found to be highly useful in indicating the more special course of verbal inquiry and physical examination required in individual cases, and perhaps in no other way can the student or practitioner so fully and rapidly make himself master of the position before him, and prepare himself for getting a complete grasp of his case.

Besides, the information thus acquired (if the preliminary survey of the case have been fully and carefully made) is much more specific than might at first sight be supposed. Thus, for instance, from the inquiries instituted it can be deduced with tolerable certainty whether the patient's principal disease is of an acute or of a chronic kind. If hot skin, calor mordax, flushed face, quickened respiration, and a pulse up to 100 or 120 be observed, there is certainly acute disease present, whether febrile or inflammatory. If pain in the chest, cough, and expectoration be present, with flushed face, hot skin, and quick pulse, thoracic disease may be safely diagnosed. Supine decubitus, with symptoms of nervous prostration, muscular debility, and flaccid outstretched limbs, with a dusky brownish tint of the skin, and a low, half-insensible state of the faculties, surely indicate fever. A peculiar warm, moist, acid smell denotes the presence of rheumatic arthritis; on the other hand, cool skin, natural or slow pulse, an undisturbed state of the faculties, the readily intelligible expression of "illness," lines of suffering traced upon the brow, the alæ of the nose, and the angles of the mouth, denote the victim of chronic disease. But as will be seen at a more advanced stage of the student's progress, many diseases impress a special physiognomy on the patient's features, which readily leads the experienced eye to a correct diagnosis. Thus Enteric disease marks peculiar lineaments of its own: a sunken eye, a pinched nose, and a painfully drawn expression at the angles of the mouth, the alæ of the nose, and the semicircular lines produced by the antagonistic contractions of the zygomatic muscles, and the depressors of the angles of the mouth. The pale lemon tint, the slightly jaundiced eye, emaciated face and frame of the victim of cancer are equally unmistakable.

§ 15. But it is time to pass to the more special and detailed examination of the patient, with a view to determine the origin (History), exact seat and nature of his disease (Diagnosis), its course and probable termination (Prognosis), and the means to be adopted for the alleviation of its symptoms or its cure (Therapeutics).

As medical diagnosis is not limited to the determination of the disease indicated to us by the patient, but demands a complete investigation of the state of all his organs and functions, such a complete exploration of the system is required as will enable us to say whether any and what other organs are affected besides those to which the patient's complaints direct our attention. It sometimes happens that a patient will suppose himself in rude health when insidious disease has already made fatal advances upon some vital organ.

I propose to adopt the following order in which to examine and record the details of the patient's case, and to explore the state of the several functions and organs.*

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* I am aware that the order of Clinical Observation here recommended is open to the reproach of novelty and want of scientific progression in its details; but I am persuaded that it will be found convenient and useful in practice, and that its details follow in a *natural* order, and one that will save time to both student and teacher. It is with extreme regret that I find myself unable to adopt or recommend the method of the London Medical Society of Observation, as put forward in their elaborate and exhaustive work, "What to Observe at the Bedside." This work, compiled by a number of gentlemen (amongst whom I reckon some most excellent friends), is eminently, but I would say abstractedly, scientific in its method and the progression of its details; it is a book to form the mind on in the study, not to work with at the bedside of disease. It may be systematic and scientific (on paper) to pass from the examination of the tongue, under

I. HISTORY OF THE CASE, comprising antecedent health and diseases, precise date, first symptoms and progress of present disease till first examination by the reporter of the case.

II. STATE ON ADMISSION, OR FIRST EXAMINATION, including the Symptoms and Signs presented under the following heads:—

1. General Moral and Physical Condition.
2. State of Cerebral Functions and Organs.
3. State of Pulse and other *general* phenomena of the Circulation.
4. State of Respiration.
5. State of General Cutaneous System.
6. State of Primæ Viæ, Digestive System, and Urinary System.
7. State of Thoracic Cavity and Organs, including the special diagnosis of (*a*), Diseases of the Heart and Great Vessels which may be present; (*b*), Diseases of the Lungs and Pleuræ which may be present.
8. State of Abdominal Cavity and Organs, including the diagnosis of disease in each and all of the Abdominal Viscera examined in detail.
9. State of the Cutaneous System, including diseased conditions of the Scalp and Skin generally. Eruptions of various kinds.

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organs of digestion, to the percussion of the abdomen and the palpation of the liver, spleen, and other viscera; but in practice at the bedside, the examination of the pulse must necessarily precede or follow that of the tongue; and the consideration of its volume, rate, and force, must be practically separated, in the great majority of instances, from the physical diagnosis of cardiac diseases, though doubtless, in scientific order, both sets of phenomena fall under those of the organs of circulation. Students and practitioners will, however, do well to have this little work for reference at home.

10. Malformations, and Wounds or Injuries of any kind affecting the Head, Trunk, or Extremities.

III. Therapeutic Appliances.

IV. Daily Progress of the Case, including a daily re-exploration of the signs and symptoms under the ten headings of No. II., and a full but concise record of any alterations in or additions to the phenomena presented on first examination; also the effects of the therapeutic measures employed, and details of any new medicines ordered.

V. Termination of the Case, comprising, if the case prove fatal, a full record of the post-mortem appearances, according to the code of instructions in Section II. of this work.

## INSTRUCTIONS FOR MAKING A CLINICAL EXAMINATION IN A CASE OF DISEASE NOT BEING WOUND OR INJURY.

I. History of the Case.—§ 16. Having ascertained and entered the patient's name, age, sex, trade, or condition, the date of admission or first examination, and the physician under whom admitted, *make the following inquiries from the patient, or his, or her, friends, or both, in brief, clear, definite, carefully-worded and delicate terms, and in a subdued, quiet, gentlemanlike, interested and sympathising, but firm and unhesitating tone of voice** :—

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* Some of the details given in this and other sections may seem, more full than necessary; but I think they cannot but be useful in supplying material for, and modes of, inquiry, to many students who often feel embarrassed in questioning a patient, and come to a standstill after one or two set queries for want of knowing what next to ask. As to many of the inquiries, it will of course not be necessary to make them in all cases. In this, as in all things else, the student must use his discretion and common sense in determining how to use

Inquire whether the patient has generally enjoyed good health, been strong and robust, of active habits, and accustomed to labour or exercise, or on the contrary, feeble, delicate, or infirm strength, and incapable of great muscular exertion; whether there has been progressive wasting and emaciation of his frame, or the contrary; whether he has gone through much hardship, privation, and exposure; been a long resident in extreme climates (frigid or torrid zones), or, on the other hand, lived an easy life in comfortable circumstances, and in temperate climates; whether he has suffered falls, hurts, or bruises to chest, abdomen, back, loins, head, or spine. Ask and record whether he has been habitually temperate in his habits, or whether he has been habitually or occasionally (by fits and starts) addicted to the excessive use of intoxicating drinks, specifying whether spirits, whiskey, gin, wine, ale, beer, or porter, the quantities habitually taken, and whether to complete intoxication on repeated occasions at short or long intervals, at periods of his life long past, or till within a recent date. Inquire whether delirium tremens (the "blue devils") has ever been brought on; if more than once; and if so, how often and when last, and observe whether the direct effects of intoxicating drink are still perceptible on the patient.

Inquire whether the patient has had primary and secondary syphilis, how often and when last; whether he has taken mercury to produce salivation, how often and when last; whether scrofula, consumption, gout, rheumatism, cancerous, or other cachectic states have been observed in his family, noting whether at his father's or mother's side, in his brothers or sisters, or in his (or her) own person. Observe whether scars, cicatrices, or other evidences of old or recent

the raw materials for inquiry here supplied. No man in his senses, however inexperienced, would think of asking a man in fever whether his grandmother died of consumption! &c.

scrofulous sores, glandular swellings, or fistulous openings, can be detected about the neck, in the axillæ, or in the groins.

§ 17. Inquire *how* and *when* (noting day and date if ascertainable) *the First Symptoms* of the present disease commenced, specifying any apparent or alleged cause. Determine whether any *Pyrexial* (febrile or inflammatory) state was present at the outset, by asking whether the attack set in with *rigors*, shiverings, chills, cold sensations down the spine, nausea, sickness, pain, uneasiness, or anxiety about the pit of the stomach, gradual or sudden *anorexia* (loss of appetite), with or without retchings to vomit, headache, pain in the back or loins, and nervous or muscular prostration, with a sense of being beaten or bruised, and followed by hot and flushed face and skin, with or without sweating, throbbing of the temples, loss of sensation, wandering, or delirium, quickened pulse and respiration, general uneasiness or localised pain or stitch.

If the result of these inquiries be negative, the disease is not febrile or inflammatory.

§ 18. Inquire next what local signs were first manifested, and in what part of the body; whether upper or lower, head, trunk, or extremities. If pain was first noticed, ascertain of what kind, in what situation, whether permanent from the outset, or recurring at intervals, and whether periodic or irregular, whether sharp, cutting, stabbing, lancinating, or dull, boring, grinding, or aching. If there be or have been swelling of any kind, note whether it is or was hard or soft, puffy, doughy, or elastic; if first seen about the head or face, the upper extremities, the chest or abdomen, or the lower limbs, or if at the ankles first: and so on with regard to any other sign or symptom first complained of by the patient, always inquiring its locality, and the order of progression of all such phenomena, *i. e.*, which was first, what course it took, and when and how another was superadded, with its locality, course, and characters. Endeavour to determine to what organ the first symptoms and signs of the disease now under observation are, or were, chiefly or exclusively referrible. If any evidence of pre-existing disease be adduced, note the principal signs and symptoms furnished by the patient, and the organ, organs, or parts to which they are most probably assignable.

§ 19. In the case of females, inquire (with all requisite delicacy), whether the patient has been or is married, whether she has borne children, how many, and when last, whether she has had miscarriages, floodings, &c., how often and when last, whether now pregnant or not, and whether in married or unmarried females, the catamenia be regular or not, whether there are or have been any wasting chronic discharges, fluor albus, menorrhagia (excessive menstrual discharge). If a child, ascertain whether the little patient has been vaccinated, had measles, small-pox or scarlatina, whooping-cough, croup, thrush, diarrhœa, tumid abdomen with general emaciation, spinal disease, scrofulous swellings, sores or fistulæ in or about the neck, throat, jaws, ears, &c.

## II. STATE ON ADMISSION, OR FIRST EXAMINATION.

§ 20. 1. GENERAL MORAL AND PHYSICAL CONDITION OF THE PATIENT.—Repeat here the inquiries and observations specified in §§ 6, 7, and 8, pp. 18, 19, under the head of Preliminary Observation, recording the results briefly and concisely.

§ 21. 2. STATE OF CEREBRAL AND NERVOUS FUNCTIONS.—The inquiries and observations specified in § 6, under the head of Preliminary Observations, may be here repeated.

Note further whether the powers of the mind are perfect or impaired, whether there be dulness and confusion of intellect; and if the latter, whether it be of recent or remote occurrence; whether "fits" of any kind, or convulsive movements, have existed. Ascertain whether sensation, volition (voluntary motion of any part of the body), and the special senses, sight, hearing, smell, touch, taste, also the powers of speech, be perfect or impaired; whether there be paralysis of the upper lid of one or both eyes (ptosis), of the muscles of one side of the face (Bell's paralysis of the portio dura of the seventh pair), of the tongue, of one or both arms partially or wholly, of one side of the body (hemiplegia), of both sides, of one lower extremity, of both lower extremities (paraplegia); whether a tremulous semi-paralytic state (paralysis agitans) affect any part or all of the limbs; if paralysis be present, note whether attended with a rigid and contracted or a flaccid and relaxed state of the flexors, or extensors, or both; and whether paralysis and anæsthesia (loss of sensation) exist singly or combined. Observe whether tonic or clonic spasms, or a tetanic or cataleptic state, exist in any portion of the body. Inquire whether general or localised headache in the forehead, vertex, or occiput be present; whether it be persistent or periodic, superficial or deep, dull and aching, or sharp and severe, throbbing, or otherwise remarkable.

Note whether strabismus (squint) be present, or whether one or both eyes be drawn inwards, upwards, or outwards; whether the pupils are contracted or dilated, sensible to the influence of light (contracting when exposed to daylight or candle-light), or immovably dilated or contracted; remark whether they are uniform or not.

Note whether any special state of irritability or exalted sensibility of the surface exist at any point: lightly scrape with the nail, or gently with a pin, the palms of the hands, soles of the feet, and observe whether reflex muscular motion can be thus induced.

Ascertain whether the alvine motions and micturition take place involuntarily or not.

Remark whether there be present complete insensibility with supine decubitus, stertorous breathing, incapacity to be roused, eye insensible to the influence of light, pupil dilated or contracted, and fixed in either condition ; all in combination constituting the state known as Coma.

§ 22. 3. State of Pulse and other General Phenomena of the Function of Circulation. — The radial pulse is that generally selected for examination ; but, as will be presently seen, it is often advantageous, and even absolutely necessary in some instances, to examine the state of the circulation by palpation of other vessels. Bring into line, with as little muscular tension as possible, the pulps of the index, middle, and ring fingers of the right or left hand (carefully cultivate the sense of touch in both), and place them gently but steadily in a vertical direction, on the anterior surface of the radius, near its outer edge and a little above the wrist-joint ; after a little careful exploration with the finger pulps, the radial artery will be felt beating, unless irregular in its course, obstructed, or that the patient is pulseless. When felt let the vessel impinge with its full force upon the finger-pulps for a quarter or half a minute, till you are able to appreciate fully all the sensations conveyed ; then alternately increase and relax the pressure upon the artery with the fingers, estimating the resistance to partial or complete obliteration of its beats. Note the fulness or tenuity of the blood current, its volume, whether large or small, its resilient force or feebleness, its hardness or softness, wiriness, threadiness (filiform character), its bounding, jerking, or double-beating (dicrotous), long, slow, heaving, or undulatory or tremulous characters, its regularity and uniformity of beat, or its irregularity and intermittence, or occasional stoppage of its pulsations. Carefully note its rate (70 to 75 being the normal pulse of adult life), giving yourself the habit at first of counting the pulse through a whole minute, by a watch or pulse-glass; afterwards it will suffice to count it carefully through a quarter of a minute.

§ 23. It will be well to accustom yourself to place the finger, for a few seconds, on the radial artery in the opposite wrist, and after having noted whether its characters correspond with those already observed or not, to pass at once to the heart, placing the hand somewhat curved on the præcordial region (§ 57), so as to accurately adapt the palm to the convexity of the chest in this situation. Apply the hand with moderate pressure, sufficient to maintain uniform apposition, and observe the frequency, force, fulness, and expansive power of the cardiac shock, especially at the end of the expiratory effort. During this examination, the fingers may be kept on the radial pulse, so that the observer may note the correspondence, or the contrary, in volume and force between the cardiac impulse and the arterial pulse. Thus only will a complete idea of the general tension of the whole vascular system be obtained; and in many instances, especially in fevers, erroneous opinions would be the result of exploring a single element of the vascular system. You will find, for example, a weak excited heart acting with apparent energy, but actual incompleteness of its ventricular contractions, whilst the pulse at the wrist is weak, shabby, and thready or imperceptible, and manifestly indicates a failing or greatly debilitated circulation; *vice versâ*, a feeble heart will be found in combination with excited and *apparently* complete arterial action.

For the pulse rate at different ages consult § 13, p. 23.

§ 24. Make it a habit to place the stethoscope rapidly but carefully over the cardiac region (after some practice, a second or two will suffice for the cardiac examination at *this* stage of the clinical study of the case). Observe the clearness, loudness, intensity, and completeness of the two sounds of the heart, or the opposite characters, and whether there be prolongation, intensification, or partial or complete obliteration of either or both ; and note the presence or absence of arterial murmurs, with the first or second, or with both cardiac sounds.

§ 25. 4. State of Respiratory Functions.—Observe whether the respirations are quicker or slower than natural (about sixteen to eighteen per minute, or one to every four arterial beats) ; note their frequency per minute ; observe whether they are calm, easy and full drawn, or short, forced, hurried and incomplete, attended by painful movements, or checked or partially arrested by cough, with or without expression of pain or suffering : remark whether inspiration and expiration are performed through the mouth, or nose, or both, whether the alæ of the nose dilate and contract at each respiratory effort, with a peculiar and constrained movement of forcible expansion. Note whether this aggregation of symptoms, which constitutes *Dyspnœa* (*i.e.*, difficult breathing), be slight, moderate, severe, or intense, and make a brief entry to that effect in your note-book. Remark whether sensible odour or vapour be perceptible on the breath, and whether it be warm or cold : also whether audible râle, snore, wheeze or whistling, or other unusual sound, attend the respiratory efforts.

§ 26. 5. State of General Cutaneous Functions.—Note the observations specified in § 10, p. 21, under the head of Preliminary Observations, remarking especially the colour, vascularity, general or partial redness, paleness, or other discolorations, state of moisture or dryness, heat (noting exact temperature by the thermometer), presence of calor mordax or of decreased temperature in trunk or extremities, and the odour of the skin, if any be perceptible. Observe whether the skin presents any general dusky, or mottled, or other unusual hue; whether Erythematous or Erysipelatous Patches, Pustules, Vesicles, Papulæ, Scales, or other cutaneous eruptions be discernible; whether Sudamina, Maculæ, Petechiæ, Vibices, rose-coloured Lenticular spots, Purpuric spots or patches, freckles, flea-bites, or other cutaneous stains, spots, or marks whatsoever be noticeable;* whether partial or general sweats have taken or still take place, whether habitual by night or day, and whether attended by distress, or relief of other symptoms. A careful inspection of the cutaneous surface is absolutely essential on the admission of every case into Hospital, and should not be neglected in private practice; it will be necessary, in fever cases, to inspect the hands, feet, chest, and part at least of the abdominal surface, even in females, all due tenderness, gentlemanly feeling and delicacy being invariably observed towards the patient. The maculæ and petechiæ of typhus fever are often best developed on the back, in the interscapular region, and should always be looked for in this situation. In important cases, whether in hospital or in private, never neglect to satisfy yourself with your own hand and eye of the temperature and particular state of the extremities, especially the feet. Note whether enlarged veins be presented on the chest, abdomen, or extremities.

§ 27. 6. State of Primæ Viæ, Digestive and Urinary Functions.—*Lips.* Note the condition of the patient's lips, whether red, moist, and natural, pale and exsanguineous, blue, livid and congested, presenting herpetic or other eruptions, dry, fissured, cracked, crusted, or exuding blood, covered with dirty creamy exudation, or blackened crusts (sordes).

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* See Glossary for the distinctive characters of these eruptions.

§ 28. *Teeth.* Note whether the teeth are covered with sordes, smeared with blood, crusted, blackened, eroded, or otherwise marked or stained, much decayed, loose or many absent, and whether any cause be assigned, as mercury, syphilis.

§ 29. *Gums.* Note whether the gingival membrane is dry, shining, firm, and coral red (natural), or pale, soft, dark-red, and spongy, detached from the teeth, exuding blood or sero-purulent fluid, marked by an undulating bluish border or fine line (lead mark); whether fetid, or sore, or painful. Whether hæmorrhage has taken place or still exudes from the gums.

§ 30. *Buccal Membrane.* Note whether it be pale or vascular, thick and spongy, or thin and atrophied, whether the buccal glands are prominent and visible as minute white bodies.

§ 31. *Tongue.* Note whether this organ is protruded with facility and straightforward, or drawn to one side, and whether firm, or tremulous and faltering; observe its volume, whether enlarged or diminished, thick, soft, moist, and marked with moulds of the teeth on its sides, as if it had been too large for the buccal cavity, and became moulded on the alveoli; remark whether it be natural, creamy, coated, furred, fissured, cracked, exuding blood or smeared with blood, covered with black or brownish sordes, dry, hard, and brown (*langue perroquet*, parrot's tongue), or mahogany coloured, whether dry, clean, and polished, with no traces of epithelium, whether flat and expanded or contracted and pointed. Characteristic states of the tongue are the following: more or less thick, whitish and clean-looking creamy exudations, a furred state of the centre with white creamy streaks at the side, in mild pyrexial states; a more or less thick white clean-looking creamy exudation, uniformly distributed on the lingual surface, but presenting a number of regular prominent bright red spots dispersed through it, more or less thickly, the whole having somewhat of resemblance to the surface of a strawberry, in the pyrexial state of scarlatina, measles, and small-pox: the dry brown crusted tongue (mahogany tongue), with accumulated sordes at the tip and edges, is eminently characteristic of the typhus condition.*

§ 32. *Pharynx and Œsophagus.* Inquire whether the patient can swallow with ease; if not, where the feeling of detention is situated, and whether the patient can swallow liquids better than solids, or *vice versâ:* observe whether the buccal and palatine membranes, velum and fauces are vascular, soft, and relaxed, covered with aphthæ, mugue, or spots of ulceration; and whether the tonsils are enlarged, swollen, ulcerated, aphthous, or containing pus in their crypts.

§ 33. *Stomach.* Inquire whether there be anorexia, (loss of appetite,) disgust for food, pain, gnawing, boring, or lancinating, or heaviness after meals, periodic or occasional vomiting of food or drink, and whether such vomiting, if constant, takes place immediately on taking food, or one, two, or more hours after any meal or meals, stating which; pain, heat, uneasiness or anxiety at the pit of the stomach, nausea, (sickness of stomach without retching,) vomiting, sour eructations, (pyrosis, water-brash,) taste of rotten eggs, ejection of watery fluid, acid or alkaline; whether clear or turbid, thick, frothy, or brownish fluid be or have been recently or remotely ejected; whether reddish bloody fluid, blood more or less altered, with or without coagulum, have been recently ejected; whether a dark fluid with blackish granular matter in suspension have been thrown off (altered blood).

§ 34. *Bowels.* Note whether the abdomen be tumid, painful, hard, or tympanitic and flatulent, or soft, flaccid, and natural; inquire whether the bowels are free or confined, habitually costive or moved daily, whether there be frequent thin watery stools, frequent and copious discharges of yellowish or brownish pea-soup-like fluid, passage of scybalæ, mucus, lymphy shreds, jelly-like matter, or blood per anum; whether rice water fluid have been evacuated; whether these appearances have been preceded or attended by pain, tormina, borborygmi (gurgling noises), localised gurgling in right iliac fossa, or other unusual symptoms.

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* See Froriep's beautiful plates of the Tongue in disease, of which a copy will be found in the library of the College of
Ireland.

§ 35. *Urine.* Inquire whether the urine be and have been (in the patient's opinion) natural in quantity, colour, smell, and other characters (normal about 30 oz. to 40 oz., even 50 oz. per day of 24 hours in some cases without disease); whether it deposits a brick-dust or other sediment; whether there is a more constant desire to pass it than usual. Have its quantity measured daily from the date of first examination of the patient, note its specific gravity (the normal specific gravity of the *urina potus*, or that after drinking, is 1003 to 1009, of the *urina chyli*, or that after a full meal 1030; that after a night's rest, the *urina sanguinis*, is 1025, which may be regarded as the healthy average specific gravity). Moisten a slip of blue litmus paper in the urine; if turned red the urine is acid (always so in the normal state, except when passed and examined *immediately* after a meal); if reddened litmus be turned blue, or turmeric paper red, the urine is alkaline; if neither coloured litmus nor turmeric paper be acted on, the urine is neutral. Observe its colour, whether pale, straw-coloured, light or deep amber, throwing down pink or brick-dust deposit, whitish and opalescent, clouded or clear, turbid when passed or after it has rested, brownish, dark-red, blood-red, reddish, smoky, like porter, thick, muddy, and with white matter in suspension when passed, depositing gravel (small irregular crystalline or non-crystalline particles of various composition); whether giving a thick flocculent deposit, in greater or less quantity, on boiling, and on the addition of nitric acid ($NO_5$).

Far too little attention is usually paid to the function of urinary excretion; but its importance will be at once apparent to the most junior student when he learns that by this emunctory alone not less than about 600 to 700 grains per day of the solids of the body, as used up, excrementitious, and therefore some of them poisonous matters, are, or ought to be, discharged from the system,—the product of the never-ending metamorphosis going on in the tissues, and the retention of which in the animal economy is often productive of highly dangerous and sometimes fatal toxic (*i. e.* poisonous) effects: it is also to be borne in mind, that through this channel, in certain diseased states, valuable constituent elements of the organism are constantly drained away in a process of wasteful or destructive excretion of *un*-used physiological material required for the growth and maintenance of the system. *If you neglect the urinary system you leave a sally-port open to the enemy.*

§ 36. 7. STATE OF THORACIC CAVITY AND ORGANS.—Having made a general survey of the case, by investigating, as directed in the foregoing sections, those derangements of functions which are the exponents of disease wherever situated, we must now turn to the careful exploration of the several great Cavities and the Organs they contain, for the purpose of determining the presence or absence of physical change, that is, organic disease, in these several parts. And, first, direct your attention to the Cavity of the Thorax, and the Organs it contains. For the purpose of more accurately exploring the cavity of the thorax and its contents, and recording the phenomena observed, an artificial subdivision of the Chest into Regions has been made: the following is that most commonly adopted:—

§ 37. The following is the simplest mode of subdividing the Chest into Regions. Draw an imaginary horizontal line from the tip of one Clavicle to the tip of the opposite; a second line, crossing the chest from side to side, along the inferior border of the cartilages of the third ribs, and a third line, passing obliquely downwards and outwards, on either side from the sternal attachment of the sixth costal cartilage along the inferior border of the sixth rib. Suppose a vertical line to be dropped on either side from the situation of the coracoid process, along the ribs and marking the junctions of the anterior with the lateral or axillary portions of the chest. The following subdivisions are thus made:—

§ 38. In the mesian line in front, the space from the fourchette of the sternum to the xiphoid cartilage, is divided by these imaginary horizontal lines into, 1. the Suprasternal, 2. the Superior, 3. the Inferior Sternal Regions. A small triangular space above the clavicle on either side, with its base internally at the trachea, and from 1 to 2 inches in vertical depth, and its apex at the outer end of the clavicle, and limited below by the upper edge of that bone, is known as the Supra-Clavicular Region. The Clavicular Region, very narrow and oblong, corresponds to the inner two-thirds of the collar-bone. The Infra-Clavicular Region, nearly square, is limited above by the clavicle, and below by the inferior border of the third rib, on the inside by the sternum, and on the outside by the line dropped vertically from the coracoid process along the ribs.

The Mammary Region, irregularly square, is bounded above by the lower border of the third rib, below by the lower border of the sixth rib, internally by the edge of the sternum and xiphoid cartilage, and externally by the vertical line before mentioned.

The Infra-Mammary Region, somewhat triangular, is bounded above by the sixth rib, below by the edge of false ribs, and externally by the vertical line along the ribs. The lateral portion of the chest, or the space under the arm-pit, is subdivided by imaginary lines into either two or three equal parts, known as the Superior and Inferior, or the Superior, Middle, and Inferior Axillary regions. We shall consider them as two, a Superior and an Inferior.

On the posterior aspect the chest is thus subdivided: that portion on either side above the spine of the scapula is known as the Supra-Spinous Region; that below the spine, and as far as the inferior angle of the bone, is called the Infra-Spinous or sometimes the Scapular Region; and from the lower angle of the scapula downwards, the inferior convex portion of the chest is known as the Infra-Scapular Region. The space between the scapulæ is called the Inter-Scapular region, and from below the level of these bones the mesian portion between the two Infra-Scapular Regions may with propriety and advantage be called the proper Dorsal Region. Still more minute subdivisions of the chest have been made, but for all practical clinical purposes those just enumerated will be found sufficient. Having so far familiarised yourselves with the external topography of the chest, it is absolutely essential that you shall become equally well acquainted with the parts which in the natural state correspond to them within, and the sounds elicited from them. The following tabular summary should be carefully impressed on the memory.

§ 39. (1.) The Supra-Sternal Region corresponds to the trachea: under certain conditions, and not absolutely those of disease, the arch of the aorta reaches the level of the fourchette of the sternum, and its pulsations can be seen and felt in this region; but in the perfectly normal state no lung-tissue and no arterial movement exist in this situation. *Per-*

*cussion clear and resonant, but peculiar, tracheal; respiratory sounds loud and blowing, tracheal.*

§ 40. (2.) The Superior Sternal Region covers the left and a part of the right brachio-cephalic vein (the superior cava runs along its right edge), the ascending and transverse portions of the arch of the aorta, the trachea and its bifurcation (with numerous bronchial glands) on a line with the second ribs, the pulmonary artery from its origin to its bifurcation, great part of the right auricle, also some areolar tissue, the remains of the thymus gland, fatty or other deposit, and the lateral pleural boundaries of the upper V-shaped portion of the anterior mediastinum, with the edges of the lungs, which, widely separated above, approximate and become separated by only an inconsiderable interval at the middle of the sternum, where the two V-shaped portions of the anterior mediastinum meet by their apices. In the lower part of the superior sternal region, near the edge of the sternum, and between the sternal attachments of the 3rd and 4th costal cartilages, the sigmoid valves of the pulmonary artery and aorta will be found in this region (see § 57.) *Percussion clear and resonant, the vibrations of contiguous parts being communicated to this bone: respiratory sounds clear and loud, but distant blowing or tubular.*

§ 41. (3.) The Inferior Sternal Region covers the greater portion of the right ventricle and a small part of the left, the infundibulum of the pulmonary artery and the mitral and the tricuspid valves, the edge of the right lung, and a very small portion of the left, a part of the liver separated from the heart and pericardium in this situation only by the diaphragm, and occasionally a portion of the stomach, when distended. *Percussion decreasing in clearness from above downwards, but nowhere absolutely dull; respiratory sound faint, conveying distant vesicular murmur.*

§ 42. (4 & 5.) The Supra-Clavicular Region contains the apex of the lung on either side, passing above the clavicle from 1 inch, 1¼, 1½, and occasionally even 2 inches, the right usually reaching slightly higher than the left; portions of the subclavian and carotid arteries and of the subclavian and jugular veins are found in this region. *Percussion clear, but not resonant, unless trachea be involved in the percussion: clear and fine vesicular murmur on inspiration; the tubular sounds of the trachea will be elicited unless the examination is made with exceeding care and with a stethoscope of very small bell.*

§ 43. (6 & 7.) The Clavicular Region covers a band of lung-substance about half an inch in vertical depth. The right sterno-clavicular articulation covers the bifurcation of the arteria innominata; on the left side the subclavian and carotid arteries ascend vertically behind the bone, and the subclavian passes downwards and outwards under either clavicle in its middle third. *Percussion clear, resonant, and peculiar, except in outer third, where it is confused, being only a comminuted vibration; clear but distinct, gentle, rustling sound on inspiration.*

§ 44. (8 & 9.) The Infra-Clavicular Region covers the bronchus and the upper lobe of the lung on either side; on the right side the superior cava lying close to the sternal edge, and part of the arch of the aorta; on the left side the edge of the pulmonary artery comes into this region, as also does part of the base of the heart. *Percussion clear, very resonant, and even loud when struck with short firm blows: soft but clear rustling sound with inspiration.*

§ 45. (10.) The Right Mammary Region covers the inferior lobe of the right lung, a portion of the right auricle of the heart, and about one-third of the right ventricle, which lies to the right of the sternum. The liver rises in this region to the level of the fourth intercostal space after expiration, but it is still partially overlapped by a portion of the lung substance; when the right ala of the diaphragm is drawn down in full inspiration, the hepatic convexity, and consequently the line of hepatic dulness, becomes depressed from one to two intercostal spaces. *Percussion full, clear, and resonant on right side, more or less absolutely dull over heart on left side; apt to be tympanitic in lower part of left mammary region from stomach. Less clear, but still audible vesicular rustle with inspiration.*

§ 46. (11.) The Left Mammary Region covers the left auricle and ventricle, a small portion of the right ventricle constituting its apex; nearly all this surface of the heart is left uncovered by pulmonary tissue in consequence of the irregular notch which the left lung presents in this situation. *Percussion dull shading off at periphery; cardiac sounds and shock predominant.*

§ 47. (12.) The Right Infra-Mammary Region covers the liver, with a variable thin intervening slip of pulmonary tissue at its anterior and upper part: the hepatic angle of the colon lies behind the liver in the lower part. *Percussion dull, except on gentle expert percussion: inspiratory rustle faint and distant as it were.*

§ 48. (13.) The Left Infra-Mammary Region covers the stomach, and a small part of the left side of the liver lying in front of it; also a portion of the anterior edge of the spleen (and a great extent of this viscus when enlarged). *Percussion tympanitic, except after meals; faint distant inspiratory rustle, metallic and amphoric sounds from stomach.*

§ 49. (14.) The Superior Axillary Regions correspond to a great volume of lung-substance and deeply seated large bronchi. *Percussion very clear and resonant; inspiratory rustle clear and very audible.*

§ 50. (15.) The Inferior Axillary Regions cover on the right side thin interposed lung-substance and the liver; on the left the interposed lung-substance and the stomach and spleen. *Percussion dull on right side, tympanitic on left; distant rustle on inspiration.*

§ 51. (16.) The Supra-Spinous Regions correspond to the posterior surface of the apices of the lungs. *Percussion clear and resonant when firm, expert, and bold, otherwise very confused and indistinct. Inspiratory murmur clear and audible, not loud.*

§ 52 (17.) The Infra-Spinous Regions cover extensive portions of lung substance. *Percussion clear and resonant; full and clear inspiratory rustle.*

§ 53. (18.) The Infra-Scapular Regions cover thin interposed portions of lung-substance, and on the right side the liver; on the left the stomach and spleen. *Percussion clear and resonant, except very low down on right side. Inspiratory rustle clear.*

§ 54. (19.) The Interscapular Region covers some lung-substance on either side of the mesian line, the trachea, bronchi, roots of the lungs, bronchial glands, and lower down the œsophagus and aorta. *Percussion clear and resonant. Blowing, tracheal, bronchial, or tubular sounds on inspiration.*

§ 55. (20.) The Dorsal Region covers on either side of the mesian line some lung-substance, and inferiorly the upper ends of the kidneys, in the middle line the aorta and œsophagus resting on the lower dorsal vertebræ. *Percussion clear, but osteal; faint, distant respiration rustle, if any.*

§ 56. *Vocal Fremitus.*—When the hand is placed on the chest while the patient speaks, a more or less distinct vibration is felt; it is very great in some persons, very ill-defined in others: it is much increased when the lungs are solidified and diminished, or suppressed when fluid effusion intervenes.

§ 57. *Position of the Heart and its various parts.*—Much discrepancy exists unfortunately on this subject, owing to the extreme difficulty, and almost impossibility, of determining the exact position of the parts of the heart with absolute certainty during life.

By attention to the following rules, the position of the Heart and Great Vessels may be determined with an amount of exactitude sufficient for all clinical purposes.

An oblique or diagonal line may be drawn from the first intercostal space on the right side of the sternum to a point between the fifth and sixth left ribs, about two inches below the left nipple and one inch to its sternal side; this line may be termined the cardiac axis; its upper end corresponds to the convexity of the arch of the aorta, its lower to the apex of the heart; at about its centre and at a point nearly corresponding to the sternal attachment of the fourth left costal cartilage, the origin of the aorta is situated behind the sternum, separated from the mitral orifice by only the right fold of the mitral valve, and overlapped by the infundibulum of the pulmonary artery, and having the tricuspid orifice a little to its right and somewhat anterior, those of the pulmonary artery being about half an inch higher up: this may be called the cardiac centre; the whole four sets of valves lying within a circle equal to a half-crown-piece in diameter. The sigmoid or semilunar valves of the aorta lie a little distance above its origin, and those of the pulmonary artery about half an inch higher up, and on a level with a line crossing the sternum from the inferior edge of the cartilages of the third ribs.

A line corresponding to the left edge of the sternum has about one-third of the heart to its right, and two-thirds to its left, while to the right of the sternum lie the superior cava, a very small convexity of the arch of the aorta, in the first intercostal space, a considerable portion of the right auricle, and a small portion, perhaps one-third, of the right ventricle.

If the sternal attachment of the fourth left costal cartilage be taken as centre, and a circle be described with a radius of about two inches, it will embrace the more important parts of the heart, and its appendages; all, in fact, that are most essential for clinical examination.

The stethoscope placed over the cardiac centre detects in the normal heart two sounds; one, the first or systolic sound of the heart, a somewhat prolonged, full, and occasionally ringing sound, caused chiefly by the contraction of the ventricles; the other, shorter, quicker, and caused by the falling down of the semilunar valves of the aorta and pulmonary artery: *listen to them in the healthy heart, to know them.*

## PERCUSSION.

§ 58. This indispensable mode of exploration may be practised with the fingers, with which undoubtedly the highest skill can be attained after long practice, or when peculiar aptitude for auscultation exists. For manual or immediate percussion, the index, or the index and magnus, of the left hand may be placed gently and uniformly in apposition with the part to be explored by either their palmar or dorsal surfaces. The pulps of the four fingers of the right hand accurately brought into line, and maintained so, but without rigid muscular contraction (the nails having been cut very short), will make an excellent percussor. Keep the elbow steady, but not rigid, at nearly a right angle; let the forearm remain motionless, and allow the hand to move with short, quick, but free vertical home-strokes on the left index or magnus successively. With skill and practice, and with motions such as those just described, but with no others, a very full, clear, and resonant percussion tone may be produced; and many delicate characters, as actual resistance and resiliency or elasticity, can be appreciated better thus perhaps than by any instrumental percussion. On the other hand, instrumental percussion has unquestionable advantages; it elicits very deeply-seated dulness or clearness, if either character be masked by an intermediate and antagonistic one, while I think it is equally certain that it defines the precise physical character and the exact extent of dulness or clearness in the part percussed better than manual or digital percussion.

Winterich's hammer now in common use, with the ivory pleximeter, will be found with practice to give very readily appreciable percussion tones; the drumstick percussor lately invented will also be used with advantage. Both, however, present in my mind very serious practical objections. Winterich's hammer has intrinsic dynamical difficulties to be overcome which I for one still feel, and which I see that every one who commences to employ it has to struggle against before he can use it with precision and satisfaction. In technical language its centre of percussion is too far forward; in common language it is all by the head, or down by the nose; one could never drive a nail with any such instrument, and it requires great address and practice to hold it well balanced without percussing at all, and when used for percussing it has to be held very tight, with marked muscular effort, to prevent its falling on one side, or striking sideways, and to give it back-stroke enough. The drumstick percussor is too resilient, and produces only superficial tones.

I recommend the employment of my hammer percussor, which has the advantages of readily found and unchangeable balance, a well-placed centre of percussion, and depth, penetration, clearness, fulness, and roundness of tone, with perfect definition of the physical characters and extent of the body percussed; and it is applicable, by percussion with the smaller end, to the exploration of very limited surfaces.

§ 59. Whether examined with manual or instrumental percussion, the following phenomena may be elicited from the human chest under various conditions:—

(1.) Clearness, resonance, elasticity, exemplified by percussion over the infra-clavicular regions; *clearness on percussion.*

(2.) Dulness, non-resonance, deadness or want of elasticity exemplified perfectly by percussion over the thigh, partially by percussion over the liver; *dulness on percussion.*

(3.) Tympanitic sound, drum-like resonance, with high elasticity, exemplified by percussion over the stomach or intestines, when filled with wind or gases; *tympanitic sound on percussion.*

(4.) Sounds with a metallic or amphoric character, like the ring of metal or earthen vessels; *amphoric sound on percussion.*

(5.) Sounds with a peculiar character, as if proceeding from a jar or other vessel with a crack or flaw in the side, and heard in the human chest when percussed under various circumstances of air and fluid in the bronchial tubes, or artificial cavities, and with the mouth open; *bruit de pot fêlé, cracked jar sound.*

I shall not attempt more specific descriptions in words of the several percussion sounds; like those of auscultation, they must be heard and elicited by repeated practice before they can be fully appreciated. Students will do well to learn by practice amongst themselves, as before recommended for auscultation, the characters of normal percussion in the various regions of the chest and abdomen.

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## AUSCULTATION.

§ 60. *Choice of Stethoscope.*—The first essential requisite is to procure a suitable stethoscope. My advice on the choice of a stethoscope is exceedingly brief and simple. I quite concur with the dictum, that to get a stethoscope to suit you, you must do as when buying a hat, "Try it on, and see will it fit you." Choose any of light but firm make, solid or hollow, it matters little which, in cedar or more simple wood if you will; but let it have a moderate-sized wooden ear-piece, and take care, if it have an indian-rubber ring, that it is not too large or clumsy: it may be all of gutta-percha if you like. Observe whether it be sufficiently hollow in the ear-piece to prevent its closing the tragus of your ear, and that the bell be nicely smoothed and rounded, not above 1 or 1¼ inch in diameter, and without sharp edges, which are inconvenient and hurt some patients. Corrigan's is an excellent stethoscope.

§ 61. Hold it easily balanced with the thumb, index, and magnus of the left or right hand, and place it gently, uniformly, and with just sufficient pressure to maintain apposition, but not more, on the part of the surface to be examined; equally gently place the ear in apposition with its ear-piece, moving the hair out of your way, and gently but carefully adapting the ear upon the ear-piece, with the head in any easy unstrained position. Listen carefully for a minute or more during your first few trials; the probability is that you will hear, or rather distinguish, nothing in the first few observations you make, owing to the nervous agitation, incomplete apposition of the stethoscope, rustling of dress or hair, rubbing of the fingers on the tube, and other disturbing causes. This is the fate of almost all beginners: don't be flurried, or give it up in confusion or despair, and above all, don't be either foolish or mean enough to be afraid to say you don't hear, or don't distinguish what you hear. Ask for an explanation of what is to be heard, and listen again and again if necessary.

Beyond the very first notions (already given) of the normal sounds heard in the different regions, I will not occupy your time and mine in describing verbally the natural phenomena distinguishable on auscultating over the lungs and heart. They are to be learned in only one way, viz., by careful, protracted, and repeated examination of these sounds in the healthy human subject. After a preliminary demonstration of certain technical points at the bedside, I am constantly in the habit of advising my pupils to make careful studies on each other, in parties of not more than two or three, in the quiet of their own rooms. Three makes a better quorum than two for these studies; this number promotes observation and inquiry, and furnishes variety, which is all-essential towards forming an ear able to appreciate that indescribable *juste milieu* which alone constitutes perfect physiological health. Auscultate carefully over the several regions in succession.

§ 62. *Abnormal Sounds audible by the Stethoscope.*—Prolonged expiration becomes audible in emphysema, the air being opposed in its egress from the ruptured or dilated cells. Puerile respiration, or a noisy and intense respiratory murmur like that in children, is audible in the adult when increased or supplementary action of the lung is called for. Dry, sonorous, sibilant, snoring, or wheezing râle (or rhonchus) is audible when bronchial tubes are thickened and offer an obstruction to the ingress or egress of air into or from the lungs.

Moist Mucous râle, when air is passing through mucous secretions poured into the tubes.

Crepitus or Crepitating râle, a sound compared to that caused by the crackling of salt when thrown on the fire, or to that caused by rubbing between the fingers a lock of hair held close to the ear: it is caused by the passage of air in exceedingly fine and minute bubbles through a dense viscid fluid in the smaller bronchial ramifications, and in the vesicles of the lungs.

Muco-Crepitus is a combination of the mucous râle and the Crepitus.

Gargouillement, or gurgling, is caused by the bursting of large bubbles of air in a cavity containing fluid more or less viscid, and in at least moderate quantity.

Metallic Tinkling is a sound having a peculiar metallic, sometimes a brassy, character, or one like the ring of a piece of metal struck smartly. It is variously caused, as by the bursting of bubbles of air through fluid contained in a cavity of certain dimensions, or by the falling of a drop of fluid from a height upon the surface of fluid in a cavity containing air; it is well exemplified by placing the stethoscope over the stomach, while a teaspoonful of water is swallowed very slowly.

Bronchial respiration; a peculiar loud, blowing character given to both the inspiratory and the expiratory effort, and caused by the vibrations of the air and tubes being conveyed through solidified lung-substance.

Tubular respiration; a modification of the foregoing, probably caused by compression of the lung by fluid.

Cavernous respiration; a peculiar deep character given to the respiratory sounds by the air passing into a large cavity or excavation in the lung.

Amphoric respiration; a character given to the air entering a very large cavity at each inspiration, or passing through an accidental or artificial opening into the cavity of the pleura already containing air.

Bronchophony; the character given to the voice when conveyed through solidified lung-substance, as if the patient spoke through the end of the stethoscope into the listener's ear.

Pectoriloquy; a character given to the voice when passing through a cavity (usually tubercular) of considerable dimensions (a very ill-defined and uncertain phenomenon).

Ægophony; a peculiar trembling character with high, squeaking, broken or interrupted notes, compared to those of Punch, and produced by the interposition of a thin stratum of fluid between the lung and the parietes.

Auscultation of the cough is of great importance. Cavernous, amphoric, metallic, and other characters, not noticeable on ordinary inspiration, become audible if the patient be made to cough while the stethoscope is applied to the chest. In the full inspiration which succeeds the efforts of coughing, crepitus, muco-crepitus and gargouillement often become audible distinctly, though not heard before.

Frottement, or friction sound; the sound of the rubbing of two roughened surfaces together, sometimes having a creaking character like that of new leather (bruit de cuir neuf), at other times soft, and like a murmur of gentle attrition.

Bruit, murmur, souffle; bruit de cuir neuf, new leather creak; bruit de scie, saw murmur; de râpe, file murmur; de soufflet, bellows murmur; de diable, &c.; various abnormal sounds attending the action of the heart and audible with or replacing its normal sounds, either or both; also heard in arteries, and occasionally in veins; in aneurismal and other tumours.

## EXPECTORATION.

§ 63. Remark the quantity, colour, consistence, and odour of the expectoration, if any: note whether it be copious or scanty; freely evacuated, or brought up with difficulty, and after continual cough efforts; whether occasional or constant; more frequent by night than by day, or *vice versâ;* occurring in the morning on awaking, or at night lying down. Take care to have it kept from day to day, in a *ware* spittoon. Observe whether it be thin, watery, and serous; or thick, viscid, glairy, soapy, or like white of egg; intimately mixed with fine or large air-bubbles, frothy, uniform in appearance; or partly of the foregoing characters, partly mixed with thick, yellowish, or greenish semi-purulent sputa of irregularly oval or circular shape (nummular sputa), or with diffused, yellowish, viscid, puriform or manifestly purulent matter; whether flocculent cotton-like masses of expectoration be noticeable. Note whether streaks, spots, or larger or more diffused quantities of blood be present with any of the above characters.

Remark whether viscid, semi-gelatinous or sizy expectoration be present, with more or less of a general reddish, rusty, or prune-juice colour, firm in consistence, and adhering to the vessel when inverted, or detaching itself in ropy masses. These characters may be present in portions of the expectoration, while the remainder is partly more or less serous, sero-purulent, or puriform.

Observe whether lymphy shreds, fibrinous filaments, plastic casts of large or small bronchi, or lymph moulds of the bronchi or trachea, solid or hollow, be present.

Examine the black carbonaceous specks or spots, greyish particles, small or large granular or minute globular masses (casts of pulmonary vesicules or minute bronchi, exhibiting under the microscope aggregated epithelial elements partially disintegrated).

Note whether concreted particles, large or small, smooth or irregular, occur in the sputa. Inquire, in phthisical cases, whether any such particles have been ejected.

Hydatids, or fragments of them, may be found under unusual circumstances.

Observe whether there be any sensible odour from the expectorated matters; whether they are faint and sickly in smell; or sour, acid, fœtid, or distinctly gangrenous: this last character is peculiar, indescribable, but once recognised cannot be forgotten.

§ 64. *Microscopical Characters.*—Note whether epithelial cells, nucleated or compound granular cells, pus-corpuscles, blood disks, fibrinous shreds, molecular particles, crystals, elements of cryptogamic vegetation, particles of hydatids (hooklets), or other foreign bodies be present.

### HÆMORRHAGES.

§ 65. Blood ejected from the mouth may be derived from very various and opposite sources, viz. nasal mucous membrane, gingival membrane, surface of the palate, fauces, pharynx, œsophagus, stomach, larynx, trachea, bronchi, or pulmonary substance; and either as a direct exudation from the pulmonary membrane, or the result of rupture of a vessel, or of an aneurism, or from a cancerous or other tumour.

The first, most simple, and essential rule is, to inspect all parts of the nasal, gingival, buccal, and pharyngeal membranes carefully, by which means a hæmorrhage alarming in appearance may often be traced to a superficial and trivial cause.

Note whether the gums are spongy and exude blood; whether the buccal, lingual, palatal, or pharyngeal surfaces be relaxed, vascular, and streaked with blood; and whether any particular point can be determined, from which the hæmorrhage seems to originate.

Inquire whether the blood has been ejected with or after coughing, hawking, or with expectoration; in gushes, sudden mouthfuls, with or after efforts at vomiting. Inspect it, and note whether it be red or dark, intimately mixed with air-bubbles, in small or partial streaks, or more copiously diffused through expectorated or other fluid or semi-fluid matter.

Observe whether the blood constitutes a small or large proportion, or the whole of the matter ejected; and remark particularly, whether it be red and florid, or dark, or blackish; whether fluid, coagulated, or separated into a blackish red fluid, with more or less of a dark or blackish powdery matter in suspension, or occurring as a deposit.

Inquire whether the ejection of blood by the mouth has been attended or followed by the passage of blackened disorganised blood per anum.

Examine a small quantity, from two or three different parts of the specimen, under the microscope. Note whether circular dish-like corpuscles of human blood, or oval or elliptical particles (blood of birds, reptiles, or fishes), be present; whether molecules, mucous corpuscles, pus elements, nuclei, epithelial cells, or ciliated cells, be mixed up with the blood corpuscles: *if epithelial cells and ciliated cells be found with the corpuscles, the blood is probably of pulmonary origin.* Observe whether molecular fatty particles, oil globules in abundance, starch corpuscles of any variety, fragments of muscular fibre, or of other animal tissue, spiral vessels, cells, or other elements of vegetable tissues, can be discerned mixed up with the blood: *if so, it is in all probability of gastric origin.*

### APPRECIATION OF VITAL STATE OF PATIENT.

§ 66. Before proceeding to the diagnosis of special diseases, I wish to impress the following rules upon your minds. The highest skill in physical diagnosis, and the most profound knowledge of pathological anatomy, will leave you but very imperfect and unsafe practitioners, incapable of clear judgment and self-reliance in difficult cases in which you have to rest on your own responsibility, if you do not from the first endeavour to master and acquire for yourselves that unwritten and indescribable knowledge which constitutes the consummate skill of the experienced medical man. It consists essentially in a faculty of appreciating the vital state of your patient; of forming a rapid but complete and accurate estimate of the nervous and muscular force he possesses; or, in general terms, of the powers of life which remain to him—his *viability*, so to speak, or the power which his system retains of resisting the morbid or fatal influences of injury or disease. Without this invaluable faculty, which is indispensable to perfect professional skill, you may diagnose the nicest points in cardiac, pulmonic, or other disease; but you will never be able to form a clear and self-reliant judgment as to whether your case may live an hour or week, and whether it will die or recover. Ingenious circumlocutions will silence or mystify anxious and inquiring friends; but you will stand arraigned of self-convicted incompetency before an inward and uncompromising tribunal; and, indeed, it is only from ignorant or superficial bystanders that you can at all successfully conceal doubt, hesitation, ignorance, and incompetency.

This faculty is not to be communicated by oral or written teachings, it is the duty of a clinical physician to impart it to you at the bedside; it is, in fact, that for which, above all else, you enter on hospital studies. Bear in mind, therefore, that besides the mere physical diagnosis of disease, you have something still more important to be taught at the bedside. Attention to the details given under the head of "Preliminary Observations," will be of material assistance in forming this part of your clinical experience.

## CASES PRESENTING SIGNS OR SYMPTOMS REFERRIBLE TO THE LUNGS.

§ 67. Having inquired into the history and made the preliminary observations (§ 6 to § 19), carefully discriminate whether the case be pyrexial or a-pyrexial.

§ 68. The diseases of the chest with pyrexial symptoms most commonly to be met with, are bronchitis, pneumonia, pleuritis, empyema, pleuro-pneumonia, pulmonary apoplexy, phthisis, pneumothorax, abscess of the lung, gangrene.

§ 69. The chronic diseases of the chest, with more or less of occasional, but not constant, pyrexial phenomena, are chronic bronchitis, asthma, dilated bronchi, cirrhosis, emphysema, œdema of the lung, chronic phthisis, empyema, hydrothorax, cancer of the lung, pleura or mediastinum acephalocysts.

§ 70. In pyrexial cases, with thoracic symptoms, after making the necessary preliminary observations (remarking any general or special congestion of the face, as on the cheeks or malar bones), note especially the frequency, force, fulness, deepness, completeness, or, on the contrary, the imperfect and suddenly arrested (by pain) character of the movements of inspiration and expiration; note whether they are attended with increased, constrained, or spasmodic movements of the alæ of the nose, of the larynx and trachea, of the scaleni, or other respiratory muscles of the neck, of the intercostal and abdominal muscles; also, whether general dyspnœa (difficulty of breathing), cough, pain in the side, oppression of the chest, sense of heat, or distress, be complained of.

§ 71. Inquire whether the pain be a dull, general pain, confined to one side (pneumonia, if other symptoms concur), a general sense of heat, suffering, or distress, referrible to the whole chest (bronchitis), or any part of it; or, on the other hand, whether the pain be localised, and of a sharp, stabbing, or lancinating character (pleuritis).

§ 72. Note whether the cough be short and hacking, or prolonged, painful, or otherwise, followed by expectoration or not. Observe whether the expectoration, if any, be free, copious, white and frothy, thin, watery, and serous, or thick, semipurulent, yellowish, or somewhat greenish, with or without blood-streaks, fibrinous shreds or casts of the tubes (various forms of bronchitis). Remark whether it be viscid, semigelatinous, tenacious, of a rusty or prune-juice colour and appearance, more or less firmly consistent, and adhering to the vessel when inverted without falling or pouring out (sputa of pneumonia).

Note whether it be more or less distinctly purulent, yellowish, or greenish, containing cottony or nummular masses (like pieces of cotton or money), soft, cheesy, or cretaceous matter, or calcareous particles, blood, in greater or less quantity, shreds, filaments, fibres, or fragments of lung tissue (phthisis at various stages). Observe whether putrid, gangrenous, or other fœtor, be observable in the sputa (often putrid in abscess of the lung, phthisis, pulmonary apoplexy; gangrenous in acute or chronic gangrene of the lung, or in gangrenous abscess).

§ 73. Examine, under the microscope D. 300 to 500, particles of sputa presenting any of the foregoing characters; note whether epithelial cells, more or less disintegrated, mucous or pus corpuscles, compound granular cells, blood-disks, fibres, fatty or oily molecules, tubercular corpuscles, stroma of lung tissue, cholestearine plates, or other crystals, confervoid bodies, or other extraneous elements, be present.

§ 74. Carefully percuss the chest before and behind through the several thoracic regions (§ 37 to § 57) noting whether slight, partial, or complete dulness, deadness, and want of resiliency, or the contrary characters to tympanitic or amphoric resonance, or bruit de pot fêlé, be observable in one or more of the regions (defining accurately which), on one or both sides of the chest, and before or behind, or both. Observe whether the line of dulness be persistent, or change with change of position of the patient; remark whether the vocal fremitus be increased, diminished, or suppressed, locally or generally; carefully explore the several thoracic regions with the stethoscope, noting whether the inspiratory murmur be increased in intensity (puerile inspiration), diminished, or absent, through a greater or less extent of the lung; whether dry (that is, sonorous or sibilant) râles, or moist (that is, mucous) râles, large or small, coarse or fine, muco-crepitus be audible (bronchitis in various stages); whether crepitus, bronchial respiration, and bronchophony, or crepitus redux, be audible (pneumonia in various stages); whether there be cavernous respiration, gargouillement, pectoriloquy, metallic tinkling over any limited surface (cavity from excavation of tubercle, pneumonic abscess, dilated bronchi; cirrhosis, gangrenous destruction of lung tissue, or other cause). Note whether friction sounds, ægophony, or modified bronchophony, be audible (pleuritis, pleuritis with effusion); whether amphoric respiration, metallic tinkling, succussion sound, splashing of fluid and air, be audible (pneumothorax with effusion); observe whether prolonged expiratory sound, with or without audible wheeze, be present (emphysema). The following summary view of the chief physical signs of the more important diseases of the lungs will be useful to the student; but, for full information on these important subjects, he is recommended to refer to the various original works cited below.* The summary here given is only meant to comprise memoranda useful for immediate reference at the bedside.

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* For the best accounts of the various Thoracic Diseases consult Williams on the Chest; several chapters in Watson's Practice of Physic; Hope on the Heart; Stokes on the Chest, and on the Heart d Aorta; Walsh on Diseases of the Heart and Lungs.

§ 75. Bronchitis.—*Percussion:* Normal in all stages, or only slight want of ringing clearness and resiliency.—*Auscultation:* Dry, sonorous, and sibilant wheezing or cooing sounds in the first stage. When secretion is established, moist, mucous, or muco-crepitatus râles (bursting of air in successive and closely following, pretty large bubbles through a viscid fluid). In capillary bronchitis, fine muco-crepitus over extensive surface, especially on posterior aspect of thorax.—*Expectoration:* White, frothy, or thin, watery, and serous, or glairy, like white of egg; or in chronic bronchitis, thick, ropy, or muco-purulent.

§ 76. Pneumonia.—*Percussion:* Normal in the first stage; dulness more or less complete in the second stage, but persistent, and not changing place, unless by extension of the disease to fresh portions of lung-substance; in the third stage, semi-dull.—*Auscultation:* Puerile respiration in whole or part of one or both lungs may be heard in a stage immediately preceding the actual development of pneumonic inflammation of the lung, and is a valuable premonitory sign. Crepitus in the first stage when the lung tissue is engorged, a very fine moist râle, like the sound of salt crackling in the fire, or that caused by rubbing a lock of hair between the fingers close to the ear: bronchial respiration and bronchophony (as if respiration and voice passed directly into the ear) in the second stage, when the lung-substance is rendered dense and solid (stage of hepatisation) by the deposit of lymphy exudation; crepitus redux in the third stage, the solidified lung breaking up and readmitting air (larger and coarser sound than the crepitus of invasion, but of the same character); gargouillement (gurgling of air in fluid), in the fourth stage, if abscess of the lung be formed, and its cavity communicate with a bronchial tube.—*Expec-*

*toration:* Rusty or prune-juice, viscid and tenacious in first and second stages, semi-purulent, or muco-purulent, or wholly purulent in third stage.

§ 77. PHTHISIS.—*Percussion:* In first stage of tubercle of the lung, the percussion-sound is not altered, or there is only very slight want of ringing clearness and resiliency; when the deposit is extensive, and a certain amount of lung-tissue is solidified thereby, slight localised, partial, and incomplete dulness is perceptible; absolute dulness is rare; if *a very large* cavity be formed, amphoric percussion may exist, and under certain circumstances the peculiar cracked jar or pot sound is produced, known as bruit de pot fêlé; in cases of perforation of the pleura and production of pneumothorax, general amphoric or tympanitic percussion will be audible.—*Auscultation:* In the very early stages, no special or characteristic sign is audible; the following phenomena will be found valuable, as early indications of approaching tuberculisation. On the existence of very slight disseminated tubercle, localised feebleness or puerility of respiration, or interrupted (*entre-coupé*) respiration under one clavicle; localised recurrent mucous (bronchitic)râle ; localised audibility of expiratory sound; localised crepitus at end of inspiration, or audible only at end of cough or inspiration which follows cough. When tubercle is deposited and softened, second stage, more or less extensive crepitus under one or both clavicles will be audible; when the tubercle becomes evacuated, and a cavity (vomica) is formed, cavernous or amphoric respiration cough and voice will be perceptible; gargouillement, metallic sounds, occasionally with or without pectoriloquy will be audible. Amphoric sounds, metallic tinkling, and succussion phenomena, are audible when pneumothorax takes place.—*Expectoration:* Not characteristic in the first and second stages; hæmoptysis pretty frequent; cottony, flocculent, or nummular sputa, purulent or muco-purulent expectoration; tubercular matter, lung fragments (?) and particles of vessels (?), or lung stroma said to be evacuated; hard, concreted particles of various sizes (inorganic salts, cretaceous and other elements of tubercle) are occasionally evacuated.

§ 78. PLEURITIS.—*Percussion:* Normal in dry pleurisy, that is, when liquid effusion has not taken place; dulness more or less complete when serum or pus is effused into the pleural cavity, the line of dulness varying with the increase or decrease of the fluid, and changing place as the patient changes his position in bed, except when the pleuritic effusion is circumscribed by adhesions. The vocal fremitus is diminished or suppressed in pleuritis with effusion.—*Auscultation:* Double friction or attrition murmur audible over the inflamed portions of the pleuræ coated with roughened lymphy exudation, unless fluid effusion intervenes; in cases of fluid effusion compressing the lung-substance, a more or less modified tubular or bronchial respiration, and bronchophony, are audible; the voice sometimes assuming a peculiar shrill, squeaking, interrupted character, ægophony, or a sound as if passing through flattened out and compressed tubes.

§ 79. EMPHYSEMA.—*Percussion:* Increased resonance on percussion, in proportion to the amount of partial or general dilatation of the air cells.—*Auscultation:* The long expiratory sound is the principal stethoscopic sign; the wheeze of asthma or the râles of associated bronchitis must not be taken for signs referrible to the dilated air cells.—*Expectoration:* Not characteristic, often clear and watery, or muco-purulent, if a certain amount of chronic bronchitis be present.

§ 80. ŒDEMA OF THE LUNG.—*Percussion:* Dulness on percussion, in proportion to the extent and completeness of the œdematous state of the lung tissue.—*Auscultation:*

Crepitus more or less extensive, and more or less fine in proportion to the extent of the œdema; this disease is almost never an isolated affection, and its diagnosis is to be made in connexion with the general history of the case and the presence of dropsy in other parts.

§ 81. PULMONARY APOPLEXY.—The phenomena of percussion and auscultation are those of semi-solidified lung, with localised dulness more or less complete, and more or less extensive crepitus. The history of the case, and the occurrence of considerable hæmoptysis, will aid the diagnosis.

§ 82. CIRRHOSIS OF THE LUNG.—The diagnosis is to be made from the history of the case, from a consideration of the percussion and auscultatory phenomena of the thoracic cavity and the superadded phenomena of more or less remarkable contraction of the affected lung, sometimes producing displacement of other organs, as of the heart, in consequence of the diminution of volume in the cirrhosed organ: thus in cirrhosis of the right lung, the heart may be found to beat in the right infra-clavicular region.

§ 83. ABSCESS OF THE LUNG, GANGRENE.—The diagnosis is to be made from the history of the case, the signs of cavity, the character of the sputa, and, in the event of gangrene, from the peculiar and unmistakable fœtor of the breath and sputa.

§ 84. CANCER OF THE LUNG OR MEDIASTINUM.—The investigation of this affection comes under the head of tumours, and the diagnosis is to be made accordingly.

## CASES PRESENTING SIGNS OR SYMPTOMS REFERRIBLE TO THE HEART.

§ 85. *Exploration of Diseases of the Heart and great vessels.*—Having inquired and recorded the history of the case, observe whether it be a pyrexial or an a-pyrexial one (according to § 6 to § 19). Impress the following practical rules on your mind.

§ 86. A. If a true pyrexial state be present (more especially if acute rheumatism, rheumatic fever, or arthritis exist), and that heart symptoms are manifested for the first time, it is *probable* (but not certain) that you have to deal with some one or other or more of the following affections of the heart or aorta:—Acute dry pericarditis; acute pericarditis with serous, sero-purulent, or hæmorrhagic effusion; acute endo-carditis; acute endo-pericarditis; acute myo-carditis; acute myo-carditis in combination with peri- or endo-carditis, or both; acute aortitis with or without any of the foregoing; and, in cases of essential fever, typhoid softening or deposit in or other change of the muscular textures of the heart.

§ 87. B. If the case be a-pyrexial (and you will bear in mind, in this class of inquiries especially, that quick pulse alone, with or without a nervously excited action of the heart, does not constitute true pyrexia), whether cardiac symptoms are now for the first time complained of by the patient, or be discovered by auscultation, or that the history of the case leads you to suppose that cardiac or aortic disease be present, you will have to pass rapidly in review before your mind, and put into practice such diagnostic rules as will enable you to distinguish between chlorotic and anæmic states, with symptoms and signs closely resembling those of certain organic diseases of the heart; hypertrophy, with or without dilatation, and atrophy of the heart; adherent pericardium, with or without hypertrophy or atrophy of the heart itself; valvular diseases, comprising those of the mitral and aortic orifices (common), of the tricuspid and pulmonic orifices (very rare), of the foramen ovale (most often observed in children); all of these singly or in combination, and with or without hypertrophy of the muscular structures of the organ; fatty states of the heart with or without valvular disease; cancerous, tuberculous, calcareous, osteoid, purulent or other deposits in the walls of the heart, or in the pericardium (uncommon); effusions of serum (hydrops pericardii), pus, blood, air or gases into the pericardium; pressure of aneurismal or other tumours on the heart; displacements of the heart from effusions into the pleura, or from the contraction of a cirrhosed lung; lastly, aneurismal or other tumours of or in contact with the aorta.

§ 88. If a pyrexial state be present (see § 6 to § 19 and the case comes under the head A. § 86), note accurately the rate, force, volume, fulness, compressibility, hardness, wiriness, uniformity, irregularity, or the smallness, feebleness, or other character, of the radial pulse; observe the carotids, and note whether their action be sensibly increased; accurately note the state of the face, whether it be partially or generally flushed, hot, and perspiring, whether any redness or special vascular injection be present on the malar bones, cheeks, or elsewhere; note, on the other hand, whether any remarkable blanched or pallid condition, with or without cold sweat, be presented on the face (often exhibited in cases in which peri- or endo-carditis has existed for some eight or ten days in connexion with arthritis).

§ 89. Remark whether the patient spontaneously refers to the cardiac region, or the line of the aorta, as the seat of distress or uneasiness, pain, heat, palpitation or throbbing; note whether there be any bulging, violent throbbing, waving motion, or other *visible* signs in the cardiac region; gently place the palm of the hand over the præcordial region (§ 57); observe attentively the extent, fulness, force, violence, uniformity, irregularity, intermission, fluctuating, trembling, tumultuous or other character of the cardiac beats; note whether any sense of fluid in motion, of grating or rubbing be conveyed to the hand. Observe whether any sensations of distress or uneasiness, pain, heat, palpitation, anxiety, tendency to faintness be produced, or increased if present by uniform pressure over the præcordial region, or by digital pressure in the intercostal spaces, in the line of the aorta, or when pressure is made upwards and to the left side from the left costo-xiphoid notch, that is, on the base of the pericardium and apex of the heart; observe whether the apex beat takes place in its normal situation (between the fifth and sixth ribs, at a point about two inches below and one inch internal to the left nipple).

§ 90. Carefully explore the cardiac region by percussion (to my mind instrumental percussion is indispensable in this class of observations); note if the cardiac dulness be increased in intensity or extent; percuss with particular care the left mammary region (§ 46) and the inferior sternal region (§ 41), recording the extent upwards and laterally towards either the right or left side, to which absolute, moderate, or slight dulness extends: (the limits of cardiac dulness at the outset or any critical period of a case might be marked with a line of caustic, otherwise specify the rib to which the line of dulness reaches:) if dulness exist to the right of the sternum, note exactly its extent in inches or parts of an inch, from the right border of the sternum.

§ 91. Place the stethoscope over the heart, upon the cardiac centre, as we shall call the point corresponding to the fourth left costo-sternal articulation; listen with attention during twenty or thirty seconds, and then, but not till then, analyse the sound or sounds heard. Observe whether the usual first and second cardiac sounds are here audible with their normal force and rhythm; whether either or both of them are intensified, prolonged, doubled, muffled, partially or wholly suppressed, obscured or replaced by double or single, hard or soft, blowing, grating, rubbing, sawing, filing, rasping, humming, cooing, or other sounds not heard in the heart in health.

§ 92. Let me repeat the mode of exploration. Listen for twenty to thirty seconds (during your first few examinations at all events), and not till then commence to analyse the sounds heard; first note whether the normal sounds are present or not, and whether modified in tone, loudness, or other character; whether either of them is replaced by a new sound, the other remaining natural; whether both of them are so replaced by abnormal sounds. Having familiarised your ear with the new sound or sounds heard, shift the stethoscope half an inch to an inch at a time, in a direction upwards along the sternum in the line of the aorta, and note whether either or both of the new sounds are propagated with increased intensity in this direction, or whether the abnormal sound or sounds become gradually lost as you pass upwards, the ordinary double cardiac sound becoming audible instead; note carefully in case there are two abnormal sounds at the fourth left costo-sternal articulation, whether both or only one become modified or lost as you pass upwards, determining accurately which; the power of distinguishing between and identifying the first and second of two abdominal sounds requires practice and a nice ear, especially when the heart is acting rapidly. The following expedients will assist the student: while the ear listens attentively place the fingers of one hand on the radial pulse, or better still, at the point where the cardiac beat is most distinctly felt; then observe which of the sounds corresponds with the cardiac shock or impulse on the finger; this will be perceived after a little practice; that sound which coincides in point of time, or is synchronous with the cardiac shock or systolic impulse, is the first or systolic sound.

§ 93. Carry the stethoscope from the fourth leit costo-sternal articulation, or cardiac centre, in the opposite direction or towards the heart's apex, and note, in like manner, whether either or both of the natural or abnormal sounds undergo change, *i.e.* whether they become increased or diminished in tone, intensity, or other character, or wholly or partially lost.

§ 94. If the sound or sounds heard present the character of rubbing or grating, friction or frottement, or a creaking character, like that of new leather bent backwards and forwards, "bruit de cuir neuf," observe whether it be double or single, audible uniformly over the cardiac region, or limited to one spot. Note whether double, "to-and-fro," distinct *friction* sounds be audible in one place, while soft murmur, double or single, be audible at a short distance: *note especially whether the characters of the sounds heard in the cardiac region alter materially from day to day, and from place to place.* (If they do, it is a very reliable indication of the existence of pericarditis in otherwise doubtful cases.)

§ 95. In cases presenting the foregoing assemblage of signs and symptoms, *probably dependent on inflammation of the serous surface of the pericardium, with exudation of lymph or serum, or both conjointly*, note with minute care the daily alterations in the percussion and auscultatory phenomena.

§ 96. If stethoscopic examination detect (in cases with general history and clinical features similar to the foregoing, but without dulness on percussion) a soft or rough blowing murmur, double or single, and propagated up the aorta or towards the apex, or in both directions, and presenting uniform characters for days in succession, we may with reasonable probability diagnose inflammation of the endocardium, or lining membrane of the heart, and of that part of it especially which forms the aortic or mitral valves, or both. If the murmur be propagated with greatest intensity up the sternum, in the direction of the aorta, the aortic valves are probably those engaged; if in the direction of the apex, the mitral valves may be expected to be inflamed.

§ 97. In cases presenting for days persistent murmur, propagated in the line of the aorta or towards the apex, or in both directions, and in which there is heard at the same time a murmur, varying in character and position from day to day, *i.e.* of the nature of double friction to-day, bruit de cuir neuf to-morrow, a soft double or single murmur in one place on a given day, and either inaudible in the same situation on the next, or of a quite different character, and especially if the general signs enumerated in § 94. be present at the same time, endopericarditis may be diagnosed with tolerable certainty.

§ 98. In cases presenting in addition to either the persistent murmurs of endocarditis, or the changeable friction phenomena of pericarditis, great cardiac pain, suffering, distress, or anxiety, throbbing, irregular or pounding action of the heart, or that combination of rapidity, irregularity, and violence of action, which may be denominated "tumultuous," myocarditis, or inflammation of the muscular structures of the heart, may be suspected in addition to endocarditis or pericarditis, or both. This is perhaps the class of cases in which there is not only most suffering, but most danger to the patient; the diagnosis of myocarditis, therefore, becomes a most important clinical feature, and this in respect both to therapeutics and prognosis.*

§ 99. In cases of Typhus Fever the exploration of the cardiac region day by day becomes a necessary part of the daily clinical examination of the case. Note, by the application of the hand, whether the heart's impulse be of natural force and extent, increased (*apparently* so, not unfrequently; *really* so, very rarely) or weakened, diminished in force and extent, or rendered altogether imperceptible. Place the stethoscope on the cardiac centre, § 57; observe with what force or feebleness the heart's shock impinges on the ear; note whether either of the sounds be prolonged or intensified (very rarely so) or weakened, diminished in tone or duration, or partially or wholly suppressed; in the latter event, the heart will be heard to act with a single sound only. Note especially whether that peculiar condition of the first sound be produced in which it resembles the second in tone, duration, and intensity, both sounds succeeding each other with great rapidity, and being perfectly undistinguishable. In this condition the cardiac action presents the closest points of resemblance to that of the fœtal heart; the term "fœtal state of the heart" is employed to designate this condition of the heart in fever.* (See § 281, in Section II., for some notice of the soft fishy state of the heart present in this class of cases.)

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* See the valuable sections on Endocarditis, Pericarditis, and Myocarditis, in Dr. Stokes's Treatises on Diseases of the Heart and Aorta.

§ 100. In other classes of fevers, careful exploration of the heart will sometimes detect slight lesions probably inorganic; such is that in which in relapsing fevers a murmur-like prolongation of the first sound has been detected, disappearing in certain positions of the body, as in the upright (Heslop and Lyons).

§ 101. Clinically speaking, the diagnosis of acute aortitis is not to be separated from that of endocarditis engaging the aortic orifice and valves; I shall therefore make no special consideration of it in this place.

§ 102. In *a*-pyrexial cases with heart-symptoms, the chief states to be met with are: A. Inorganic disease of the heart and aorta, *i.e.* diseases in which no physical change or alteration has taken place in the heart or its valvular apparatus, or the aorta; B. Organic diseases, in which the heart, its muscular structure, valves, orifices, or the coats of the aorta have undergone more or less extensive physical change, resulting in the production of permanent mechanical lesion of parts.

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* See Dr. Stokes's valuable paper on this subject. As doubts have been expressed as to the actual production of this condition in the adult heart, I beg leave to say that I have repeatedly verified it in fever cases, and very lately, in a most marked manner, in two cases.

§ 103. Having noted the history of the case and its general clinical features, inquire carefully, if in females, whether menstruation has been, or is, regular, irregular, partially or wholly suppressed or excessive; note whether there be the general pallor, with a blanched, waxy, and semi-transparent state of the integuments of the neck and face, or of the surface generally.

§ 104. Observe the force and extent of the cardiac impulse, by careful palpation. Place the stethoscope on the cardiac centre, and note whether either of the sounds be increased in tone, duration, or intensity, partially or wholly suppressed or replaced by murmur of any kind, whether either of them (usually the second) be reduplicated, and whether cooing, humming, musical, or other sounds be audible with the first or second cardiac sound; determine the direction in which any such sound is propagated.

§ 105. Place the stethoscope most delicately and lightly over the jugular veins and carotids, and note whether any single or double continuous or interrupted cooing, humming, or other musical sound be audible; the continuous venous hum is known as the bruit de diable. An assemblage of general and clinical phenomena, like the foregoing, indicate the presence of anæmia and chlorosis, and the cardiac and valvular murmurs, if any, are to be attributed to peculiar impoverished states of the blood, not to organic lesion of the heart. In all such cases, valuable aid in diagnosis will be gained from the results of the juvantia, medicines producing a favourable effect, and also from time; thus, for instance, if under general tonic treatment and the exhibition of iron, the pallor diminishes, the heart's action becomes regular, and the murmurs cease or become sensibly diminished, the conclusion is obvious that the heart affection was or is inorganic, the disease essentially being an impoverished state of the blood.

§ 106. *A-pyrexial organic diseases of the heart and aorta.*—The chief of these diseases may be considered to be hypertrophy of the ventricles, diseases of the mitral and aortic valves, fatty degeneration, atheromatous states of the aorta, aneurism, dropsy of the pericardium.

§ 107. In cases with the pulse moderate in rate, force, and volume, and not strikingly visible in the radial and carotid arteries, observe whether the cardiac region be visibly prominent, and to what extent: examine the force and extent of the cardiac impulse by careful palpation; observe whether it be forcible, heaving, violent, knocking, shaking the patient's chest or head, and moving the head of the observer with sensible force at each beat, or feeble though extensive, and of a waving, vermicular character, though over a large surface; observe whether there be any doubling of the impulse, or back stroke; note especially where the apex beat is to be felt, whether at its normal site, or in the sixth or seventh intercostal space, and whether within, on, or exterior to, a vertical line through the left nipple.

§ 108. Carefully percuss the præcordial region, and determine the precise limits of the cardiac dulness; whether it reaches to or above the second rib, to or below the fifth, sixth, seventh or eighth rib, one or more inches to the right of the sternum, and to or beyond the vertical line passing through the left nipple.

§ 109. Place the stethoscope on the cardiac centre, and observe with attention whether the sounds are normal, or altered in character, or replaced by murmur; whether the first be prolonged, lingering, intensified, reduplicated, or weakened, muffled, feeble, *clothy;* note whether the second sound be normal, clear, loud, prolonged, reduplicated, or replaced by murmur. Heaving, forcible impulse, increased dulness, muffled or clothy first sound, the second being unimpaired, indicate hypertrophy of the ventricles, probably without dilatation or valvular disease.

§ 110. When dilatation is associated with hypertrophy (commonly the case), the impulse is fuller, more powerful, and more extensive, and the sounds are loud, clear, or ringing, unless either, or both, be replaced by murmur.

§ 111. Cases not reducible to the foregoing groups, and presenting distinct valvular murmurs, we may divide into *those with obstructive* and *those with regurgitant disease of the orifices.* In the first class we have the affections of the mitral and aortic orifices, in which the blood is prevented from passing freely from the left auricle into the left ventricle, or from the left ventricle into the aorta, by constriction, thickening, lymphy deposits, vegetative or warty growths or excrescences, atheromatous or calcareous deposits on the mitral or semilunar valves. In the second class of cases, we have those affections in which, from rupture, rents, fissures, cribriform perforations, chronic irregularities, or deficiencies, ulceration, or absorption of the mitral or aortic valves, they become inadequate to perform the office of closing the orifices to which they are attached, and a regurgitation of blood is allowed from the left ventricle into the left auricle on the one hand, and fróm the aorta into the left ventricle on the other.

§ 112. *Obstructive disease of the Mitral Orifice* leads to dilatation of the left auricle, but is not attended with appreciable murmur, in consequence of the auricular contractions being weak, vermicular, and not instantaneous.

§ 113. *Obstructive disease in the Aortic Valves* at the mouth of the aorta is accompanied by a murmur propagating along the aorta, and often into the carotids, heard with or replacing the first sound of the heart, attending the systole or contraction of the ventricles, and hence known as a systolic murmur.

§ 114. *Valvular deficiency at the Mitral Orifice*, allowing regurgitation of blood from the ventricle into the auricle, is attended with systolic murmur, propagated towards the cardiac apex and towards the axilla.

§ 115. *Valvular deficiency* (*Permanent patency*, Corrigan) *at the Aortic Orifice* is attended with murmur, caused by the falling back of the blood through the aortic orifice, from this vessel into the ventricle; the murmur replaces the second sound of the heart, and is propagated towards the cardiac apex.

§ 116. Observe the rate, force, and volume of the pulse, whether it be full, bounding, jerking or small, fine, and thready; visible in the radial and carotid arteries, and presenting a quick sudden filling, with equally sudden collapse and disappearance, or small, deep-seated, and invisible.

§ 117. Observe whether (1) bounding or jerking visible pulse coincide with regurgitant murmur at the cardiac centre propapated towards the apex (*permanent patency of the aortic valves*), or (2), with a double to-and-fro murmur, replacing both the first and second sounds of the heart, and propagated up the aorta towards the apex (*permanent patency of the aortic valves, with obstructive disease at the aortic orifice*); or (3), with regurgitant murmur at the cardiac centre, propagated towards the apex, and with systolic murmur propagated towards the axilla (*regurgitant disease in both mitral and aortic orifices*); or (4), to-and-fro murmur at the aortic orifice, heard at apex, up the aorta, and in the carotids, and systolic murmur propagated into the axilla (*obstructive and regurgitant disease of the aortic orifice, and regurgitant disease of the mitral orifice*).*

§ 118. In chronic cases of persons in middle or advanced life, with indistinct cardiac symptoms; long, weak, slow, pulse (28, 40, or under 55 per minute); tendency to faintness, giddiness, or pseudo-apoplectic attacks; having an instinctive desire for the occasional or habitual use of cordials, or stimulants of any kind, and feeling in inward want of them; presenting weak, labouring, occasionally or habitually irregular or intermittent impulse of the heart, indistinct or muffled first sound, with or without faint, weak, systolic murmur,—the fatty degeneration of the heart may be suspected, and is presumably present, if no other diseased state, as softening of the brain, &c., be discoverable, capable of accounting for all or several of the symptoms.

§ 119. In cases in which the presence of aneurismal or other tumours is suspected, exploration of the phenomena may be conducted on the following systematised plan, which, if rigidly followed out, will, in the great majority of instances, lead to the detection in the first instance of tumour generally, *i.e.* the presence of tumour of *some* kind in the cavity of the chest, and in the next place, of its specific nature, whether aneurismal, cancerous, or otherwise.

All the phenomena which can possibly be produced by tumours, may be regarded as (A.) extrinsic, and (B.) intrinsic; the former are the general phenomena, such as pain, dyspnœa, dysphagia: the latter, those belonging to the tumour itself, as pulsation, murmur, &c.

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* The more special details of valvular diagnosis must be studied at the bedside.

### A. *Extrinsic Phenomena of Tumours.*

§ 120. (1.) Those resulting from interference with the natural sonoreity of the chest (or abdomen).

(2.) Those resulting from interference with the functions of other organs, comprising:—

a. Pressure on bone, as on the ribs, sternum, or vertebræ, causing erosion of osseous substance, and more or less dull boring or aching pains, constant or periodic, and more or less severe in various cases.

b. Pressure on nerves, as on the laryngeal recurrent, causing stridor, aphonia, hoarseness, &c., constant or recurrent: on the intercostal nerves, or those of the brachial or lumbar plexuses, causing pains or loss of power in the muscles of the chest, or abdomen, arms, loins, limbs, with startings, or shooting, or lancinating pains.

c. Pressure on vessels: (1) on veins, causing œdema of parts, as of the neck, the front or side of chest, one or both arms, hand or forearm, or both; also venous turgescence with abnormal prominence of veins in the neck, on the chest or abdomen, the upper or lower extremities: (2) on arteries, causing inequality of radial pulse, obliteration of radial, brachial, or axillary pulse, obstruction to, or obliteration of, bronchial arteries, causing more or less extensive death or gangrene of pulmonary tissue.

d. Pressure on tubes, as on air-tubes, causing dyspnœa, stridor, aphonia, unequal respiration, or absence of vesicular murmur in part or all of one lung; on œsophagus, causing dysphagia.

e. Pressure on organs, displacing them from their own proper centre, as on heart, right or left lung, liver, or any other abdominal viscus, when the aneurism is situated in that cavity. Cough with watery expectoration, bloody exudation, or actual hæmorrhage, may be the result of such pressure.

### B. *Intrinsic Phenomena of Tumours.*

§ 121. (1.) *Impulses.*—There are usually two distinct impulses in thoracic aneurisms, one only in abdominal: the first in thoracic, and the only one in abdominal aneurism, is generally a full, strong, diastolic, expansile movement, sensibly dilating in all directions the hand placed upon it; the second impulse of thoracic aneurism is shorter, quicker, and less distinct.

(2.) *Sounds.*—There are usually two sounds in thoracic aneurism, one only in abdominal; the first in thoracic, and the only one in abdominal aneurism, is usually a full, prolonged, but dull sound, sometimes, but not always, of the character of murmur; it most commonly conveys the idea that it is caused by the shock of the impulse of the tumour on the ear, hence appropriately called *bruit de choc*, which may be looked on as the normal sound of aneurism, capable of being replaced by bruit of any kind, and that irrespective of bruit in the heart.

§ 122. The second sound of thoracic aneurism is usually short, occasionally loud, but very variable in character; sometimes like that of the heart, but it may be of the character of bruit, while the second sound of the heart is normal.

§ 123. Clinical exploration, in cases of suspected aneurism, must follow the foregoing line of inquiry in detail; the phenomena under the several heads of pressure are those which will most readily, and at the earliest stage, determine the existence of tumour generally (*presumably* aneurismal in the majority of cases, from the preponderance of this class of cases over other tumours); but it is on the intrinsic phenomena we must depend for the special diagnoses of aneurism from other tumours.

§ 124. The following sources of error are to be borne in mind in the diagnosis of aneurism; in the thorax, dilated states of the aorta, regurgitant aortic valve disease, enlarged bronchial glands, cancer of bronchial glands, cancer either in the mediastinum or in the lung-substance, pulsating empyema, throbbing of lung-substance in certain cases of pneumonia; in abdominal aneurism, local irritative pulsation in the aorta, the same state with enlarged left lobe of the liver, large softened lumbar glands, pressing on and receiving a pulsation from the aorta, isolated cancerous, or other mass in the wall of the stomach, in the omentum, or elsewhere, getting in front of the aorta, psoas abscesses, or other purulent collections, with a pulsatile motion communicated from the aorta; lastly, movable kidney, thrown across the line of the aorta.

The diagnosis of these affections must be derived from the history of the cases, and their special clinical characters.*

§ 125. (8.) STATE OF ABDOMINAL CAVITY AND ORGANS. —The abdominal cavity may be divided into nine regions, as follows:—Draw an imaginary vertical line on either side, from the centre of Poupart's ligament upwards, till it reaches the chest; imagine two transverse lines crossing these, one about an inch above the umbilicus, and the other passing from the crest of the ilium on one side, to the same point on the opposite side. We thus define nine regions: viz. the Epigastric Region, or Epigastrium; on either side of it the Right and Left Hypochondriac Regions. A space some three to four inches square, having the umbilicus in its centre, constitutes the Umbilical Region, on either side of which we find the Right and Left Lumbar Regions. A space of irregular shape, and some three to four inches square, situated above the symphysis pubis, receives the name of Hypogastric Region, and on either side of it are placed the Right and Left Iliac Regions.

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* For a general method applicable to the diagnosis of aneurism and other tumours, see the author's paper on the Motions and Sounds of Aneurism, the Mechanism of their Production, and their Diagnostic Value, Dub. Journal, May, 1850.

§ 126. In the centre above is the space known as the Epigastrium; it corresponds to the left side of the liver, part of the stomach, the pylorus, part of the duodenum, and of the pancreas; the term Scrobiculus cordis is applied to the small somewhat depressed part of this region just below the xiphoid cartilage. The impulse of the heart can be frequently seen and felt in the scrobiculus cordis; part of the base of the pericardium, where it rests upon the diaphragm, being here separated from the surface but by a short interval, and there being no intermediate structures between this sac and the surface but the tendon of the diaphragm, and the here somewhat thin parietes of the abdomen. The cardiac shock will be distinctly perceptible if two fingers be passed in a direction upwards and towards the left in the angle between the xiphoid cartilages and the left ribs (left costo-xiphoid notch); and in this situation it will be desirable to explore the cardiac phenomena by touch, under many circumstances. The left lobe of the liver, and great part of the stomach, correspond to the epigastrium. *Percussion: stomachal, tympanitic.—Metallic and amphoric sounds on auscultation, if the fluid and air in the stomach be set in motion by any cause.* On either side of the epigastrium are the right and left hypochondriac regions.

§ 127. The Right Hypochondriac Region is occupied by the right lobe of the liver, beneath which the colon makes its first turn,—hepatic flexure or angle of the colon. *Percussion: perfectly dull and dead, except on deep expert per-*

*cussion, which elicits a sub-tympanitic sound from the gases in the colon, especially when this intestine is much distended.—Auscultation: no sounds audible except those from motions of fluid and gases in colon.*

§ 128. The Left Hypochondriac Region corresponds to the great convexity of the stomach and the spleen; also the splenic flexure or angle of the colon. *Percussion: stomachal, amphoric, or tympanitic (the spleen being of normal volume).—Auscultation: metallic, amphoric, or tympanitic sounds, audible if the gases and fluid in the stomach be set in motion.*

§ 129. The Umbilical Region corresponds to a part of the transverse colon, but principally to the coils of the jejunum and portion of the ilium intestines; at its lower part, the convexity of the lumbar vertebræ comes prominently forward; and the abdominal aorta, to its bifurcation on the left side of the body of the fourth lumbar vertebra, can be felt without difficulty in thin subjects. *Percussion: sub-tympanitic generally; but if the transverse colon, or the small intestines, be very much distended with gas, the percussion phenomena will vary accordingly.—Auscultation: if the fluids and gases of the intestines be set in motion by peristaltic action or otherwise, gurgling sounds, borborygmi, &c., will be audible; if the stethoscope be pressed with moderate force towards or against the spine, the shock and sound of the abdominal aorta will be conveyed to the ear; and, by moderate pressure, a murmur will be produced under certain circumstances.*

§ 130. The Right and Left Lumbar Regions correspond to the ascending and descending portions of the colon, and to the right and left kidney, respectively; the superior angle of the duodenum partly projects into the right lumbar region. *Percussion: dull at the most external part of each lumbar region; over the line of the ascending and descending colon, the percussion will be moderately or loudly tympanitic in* *proportion as the intestine is distended with gas.—Auscultation: no sounds except when the fluids and gases of the colon are set in motion.*

§ 131. The Hypogastric Region corresponds to the bladder, rectum, and the uterus in the female; some coils of the small intestine generally lie in front of the pelvic viscera, unless when the bladder, uterus, rectum, or ovaria are very much enlarged. *Percussion: sub-tympanitic, but varied in proportion to the distension of the intestine with gases.—Auscultation: no sounds, unless the intestinal gases and fluids are in motion.*

§ 132. The Right and Left Iliac Regions or fossæ correspond to the cæcum or caput coli, and the sigmoid flexure of the colon respectively; the ovaries in the female occupy these regions, and variable portions of the coils of the small intestines will be found in them. *Percussion: sub-tympanitic.—Auscultation: no sounds, except fluids and gases of intestines be in motion.*

I have applied the term Sub-tympanitic to the sound elicited on percussing the various resonant parts of the healthy abdomen; it will be necessary to bear in mind that sound of the same character, but of greater loudness and intensity, is produced on percussion, when large quantities of gases are accumulated in the stomach of the large or small intestines. The degrees of this abnormal drum-like resonance I shall define by the terms "tympanitic," "very tympanitic," "highly tympanitic."

§ 133. *General State of the Abdomen.*—Note whether the abdominal muscles have a natural resistance, and the abdominal walls be soft, pliant, and yielding, or hard and rigid; whether enlarged and tortuous veins be visible on the surface; whether the abdomen be full or empty, flat and retracted, or tumid and swollen: whether it be anywhere painful or hot, dry or moist; whether it be tympanitic, *i. e.*

giving a hollow drum-like sound, or yield a dull dead sound on percussion; also, whether there be any sign of "fluctuation," that is, of fluid impinging with a light, smart, wave-like shock on one finger or hand, when an opposite and distant part of the abdomen is lightly and smartly tapped with another finger or fingers. Note, in children, the presence or absence of the pot-bellied state of the abdomen, with fluctuation, general emaciation, and presumable presence of enlarged mesenteric glands, tabes mesenterica. Determine, if fluid be present, the exact line it reaches in certain states of decubitus, as when the patient is on his back, on his side, or standing up; note particularly whether the line of dulness changes with change of the patient's position.

§ 134. Distinguish between the dulness and fluctuation of fluid in the general cavity of the peritoneum (*Ascites*), and the similar phenomena resulting from fluid in the cyst-like dilatation of the ovaries in the female (Ovarian dropsy)· In Ascites the tumefaction is uniform and general from the first; in Ovarian dropsy the patient usually refers the origin of the disease to one or other of the iliac fossæ.

In Ascites, gravitation causes the line of dulness of the fluid to change as the patient changes position; in supine decubitus there is dulness in the flanks, and to a variable extent in the lateral wall of the abdomen; the intestines float towards the surface, and may be recognised there by resonant or tympanitic percussion sound.

In Ovarian dropsy the dulness is limited to a particular locality, and undergoes no change of position (at least very little) as the patient moves; and, as the cyst approaches the surface, a limited portion of the abdomen will give dull percussion with fluctuation, which phenomena are neither central nor symmetrical, as in Ascites.

§ 135. The following groups of affections are capable of presenting the phenomena of tumor in the abdomen, and more or less closely simulating each other. From the preponderance of aneurism and cancer, the question will usually lie between these two diseases and all others, and between themselves.

1. Scirrhus Pylori.
2. Cancer Pylori.
3. ——— of the Stomach generally.
4. Scirrhus of the Pancreas.
5. Cancer of the Mesentery.
6. ——— of the Ovary.
7. Fibrous tumours of Ovary.
8. Cysts or Acephalocysts of Ovary.
9. Extra-uterine Fœtation.
10. Fæcal Accumulations.
11. Aneurism:
    - (a) of Hepatic artery.
    - (b) of Mesenteric artery.
    - (c) of Cœliac axis.
    - (d) of Iliac artery.
    - (e) of Abdominal aorta.
12. Excited state of the Aorta, especially when permanent patency exists.
13. Enlarged left lobe of Liver with pulsation from excited aorta.
14. Psoas Abscess receiving pulsation from aorta and iliac arteries.
15. Diseases of Lumbar Glands, whether cancerous or tubercular.
16. Tumours of Liver.
17. ——— of Spleen.
18. ——— of Kidney.
19. Movable Kidney getting in front of the aorta or iliac arteries.
20. Pericæcal Abscess (so-called Perityphlitis).
21. Singular forms of intestinal Neuralgia.

### *Inflammatory Diseases of Abdomen.*

§ 136. The following special characters may be commonly found to attend intestinal, or, in general terms, abdominal inflammatory diseases.

(1.) *General State.*—There is a peculiar liability to sudden sinking and collapse, with general anxiety and apprehension of fatal issue, cold sweats, and tendency to coldness of the surface, and especially in the extremities: the intellect often remains clear to the last.

(2.) *Face.*—The features early acquire a peculiar, marked, and very characteristic expression. They become sharp and pinched, somewhat livid or bluish; the whole countenance having the characters expressed by the term Facies Hippocratica, which cannot be described, and must be seen to be known.

(3.) *Pulse.*—The pulse is generally small, wiry, and rapid at first: afterwards weak, thready, or readily extinguishable (shabby pulse); localised irritative pulsation may very frequently be detected in the abdominal aorta, the mesenteric artery, and occasionally in the femoral arteries; the force of this pulsation is sometimes very considerable, and very remarkable when contrasted with the weak thready pulse at the wrist, and the feeble cardiac action.

(4.) In peritoneal inflammation, the abdomen is often flat, hard, and extremely painful: the pain is of a peculiar, very severe, and oppressing character.

(5.) In enteric inflammation, the pain is more diffused, often accompanied by griping, tormina, and tenesmus, a tumid state of the belly, with localised gargouillement in the right iliac fossa; diarrhœa with barmy or pea-soup-like evacuations may be present, but constipation may occur.

§ 137. Peritonitis from perforation may be suspected, if not positively diagnosed, when in a case presenting the clinical history and symptoms of enteric diseases, sudden, extreme, and otherwise unaccountable prostration and collapse set in, after, or attended with, sudden pain, and occasionally a distinct sense of something having given way in the abdominal cavity. If not rapidly fatal, the course of the case is similar to that of peritonitis from other causes, except in the event of a renewed perforation, by detachment of the perforated portion of intestine from the conservative adhesions it had contracted: this unfortunate and usually fatal accident producing a second effusion of the intestinal contents, and a second and usually fatal attack of peritonitis, may result from the injudicious use of purgatives; it is occasionally an accidental and unaccountable event.

§ 138. *Stomach.*—Having made the inquiries specified in § 33, and noted whether the patient be fasting or have just taken a meal, inspect the epigastrium, and note whether any general or localised prominence, bulging or flattening, and retraction be present; whether there be any general or localised waving or distinctly pulsatile motion. Carefully percuss the epigastrium, part of the right and all the left hypochondriac, the umbilical, and the left lumbar regions, with smart and deep strokes; by careful practice, considerable facility and accuracy may be acquired in determining the limits of the stomach. In the healthy state, and when only moderately distended, one or two hours after a meal, as is usually the case at the time of hospital visit, this viscus should be limited to the epigastrium, the left hypochondriac, and a small part, if any, of the right hypochondriac region; but under certain conditions of disease, as in scirrhus pylori, it may reach a great amount of distension, and pass into the umbilical and part of the left lumbar, if not into the hypogastric and iliac regions. Note during percussion whether any localised dulness be observable at any part of the epigastrium. The stethoscope may be placed over the epigastrium, when by the natural motions of the stomach, or by pressure or succussion, metallic or amphoric sounds, or plashing or gurgling sounds with an amphoric character, may be induced; metallic tinkling is readily produced if the patient be made to swallow a small quantity of liquid by successive efforts.

§ 139. Place the hand on the epigastrium, and with gentle, steady, and increasing pressure, continued for a few moments, according to the sensations of the patient, ascertain if any of the gastric symptoms complained of, as heat, pain, or nausea, be thus induced, or increased if present. Distinguish between hysteria or imaginary pain or uneasiness, complained of almost before the hand is placed in apposition with the epigastrium, and always on the slightest first pressure, but disappearing under steady continued pressure, and real suffering always increased by pressure (except in the case of colicky pains). Observe by delicate palpation whether there be any general throbbing or pulsatile movement in the epigastrium, and whether it be a merely communicated wave, confused and ill-defined to the hand, or an intrinsic pulsatile action, conveying the unmistakable sensations of distinct and immediate expansile diastolic throb.

§ 140. Cause the patient to lie perfectly supine, relaxing the abdominal parietes completely by partially flexing the thighs on the pelvis; then with the fingers of both hands make deep alternate pressure over the whole imaginary outline of the stomach, from the cardiac to the pyloric orifice, along the line of the great and lesser curvature, and in the intermediate space. Note whether any painful spot or spots, irregularities of surface, nodulated or bossy elevations, or distinct tumour or tumours be perceptible (probably cancerous masses). If dulness or pulsation have been previously discovered, explore its site, and define with the fingers as accurately as possible the size, moderate or stony or intermediate hardness, or the softness, solidity, or semifluidity of the tumour, its mobility or fixed character, and, if possible, whether it be in, on, before, or behind the walls of the stomach. If it possess a pulsation, note whether the tumour can be pushed to any point at which it loses the pulsation, and whether such pulsation be a communicated to-and-fro motion or an intrinsic, diastolic, expansile, action. Observe whether it be double or single, and whether with the stethoscope a single dull sound of shock or impact on the ear (bruit de choc), or a double sound, or single or double murmur be elicited, and whether of a soft or hard, blowing, filing, or rasping character: whether this pulsation and bruit disappear under change of position, as when the patient is in the erect or semi-erect posture.

§ 141. The pylorus may be specially explored by deep digital palpation, with alternate pressure of both hands at a point about two inches above, and the same distance to the right of, the umbilicus; observe whether any defined hardness, or more or less distinct tumour be perceptible in this situation. Owing to the depths of the parts, and the facility with which they escape from pressure, it is often exceedingly difficult to detect tumours in the pyloric region. The following mode of exploration will be found very useful. Having freely evacuated the bowels by a smart purgative by mouth or anus the night previous, cause the patient to lie with his right side close to the edge of the bed (on a hair mattress, if possible), in the supine position, the knee slightly drawn up, and the abdominal walls as much relaxed as possible; place the palm of the left hand under the patient's loin on the right side, just below the ribs, and clear of the spine; the thumb may be made to hitch on the patient's flank, and the fingers may be now steadily pressed with moderation in a direction forwards; a *point d'appui*, or counterpressure, will thus be secured, and the parts within the abdomen steadied, while the pylorus is explored from before by the fingers of the observer's right hand. In this way, a tumour, if present, can be secured between the fingers of the right hand in front and the left behind, prevented from slipping to one side or upwards or downwards, and its dimensions, hardness, attachments, and relations, can be defined with an accuracy in no other way attainable. A similar mode of exploration will be found useful in reference to other parts of the abdomen, as to the viscera in the lumbar, and partially to those in the iliac, regions.

§ 142. The tract of the small and large intestines may be followed through the several abdominal regions by careful exploration with palpation, percussion, and auscultation. The termination of the ilium and the cæcum or caput coli in the right iliac fossa must be explored with peculiar care and attention under certain circumstances, viz. in cases of phthisis, in typhoid fevers, pericæcal abscess (so-called perityphlitis), foreign body, or ulceration in the vermiform appendix.

§ 143. Observe whether localised heat, pain, redness or swelling, bulging or flattening, masses of indurated fæces, an emphysematous state or crepitation, be perceptible in the right iliac fossa. Note whether any slight or more considerable œdema, doughy or boggy feel, be present in this region: whether there be tympanitic, very tympanitic, or highly tympanitic resonance on percussion; or, on the contrary, only moderate central resonance, with more or less complete dulness around. Ascertain whether there be pain or tenderness on pressure, and whether, by alternate digital pressure with either hand, a peculiar gurgling noise can be elicited, *ilio-cæcal gurgling;* observe the same phenomena with the stethoscope, using alternate pressure and relaxation with the bell-end; note further, whether any crepitation be sensible to the fingers, or audible by the stethoscope.

§ 144. Observe whether the colon be traceable in its ascending, transverse, and descending portions; whether any fæcal accumulations can be felt through the parietes, especially in the left iliac fossa corresponding to the sigmoid flexure of the colon.

§ 145. Explore by deep palpation, with alternate pressure of the fingers of both hands, the sigmoid flexure of the colon, at the junction of the left iliac fossa and hypogastrium; if localised pain, habitual constipation, the passage of filiform, cord-like, flattened, excavated, or otherwise marked fæces, with or without hæmorrhage, or any other sign or symptom, direct attention to this region; carefully explore the rectum to the sigmoid flexure by the introduction of the rectum bougie, noting the amount and kind of resistance, if any, offered to its passage.

§ 146. Inspect the external orifice of the anus, noting whether it be fissured, lacerated, or ulcerated, whether abscess exists, or whether the mucous membrane be protruded or prolapsed, with or without hæmorrhoids (piles), warty excrescences and vegetations, abrasions, fissures, ulcerations, sloughs, cicatrices, fistulæ, hæmorrhagic exudation, cancerous or other growths. Note the particular form of the fæces passed (if in any way remarkable). Pass the index finger, previously oiled, into the rectum: observe whether any constriction or obstruction exists, ascertaining, if possible, its vertical extent, thickness, hardness, mobility, or fixed character, whether attached to, or growing from, the rectal walls, or protruding into the cavity of the viscus from without.

§ 147. *Diseases of Liver.*—Having determined whether the case be, or have been, a pyrexial or an a-pyrexial one, see § 6 to § 19, and whether any symptom or sign noticed in the preliminary examination, as, for instance, jaundice, bear specially on the liver; inquire whether pain, heat, swelling, dyspnœa, sense of weight, heaviness, dragging, or constriction be, or have been, complained of, referrible to the hepatic region; whether pain in the right shoulder or down the right arm be, or have been present.

§ 148. Inspect the right hypochondriac region, and note whether any general or localised fulness, bulging, flatness, depression, œdematous or other swelling, be observable; whether there be any sulcus definable between the inferior borders of the ribs, and a tumefied projection in the lumbar region (hepatic sulcus from depressed liver, when paralysis of the diaphragam occurs in empyema, *and its right ala becomes convex downwards*). Observe whether there be any pointing of deep-seated abscess, with boggy feeling of indistinct and deep fluctuation; whether any nodulated or globular irregularities of surface be perceptible.

§ 149. Carefully explore the hypochondrium by alternate palpation with the fingers of both hands. Note whether this region be hot, painful, or tender to the touch; observe whether the surface be smooth and uniform to the hand, or nodulated, irregular, or presenting bossy elevations. When the abdominal parietes are completely relaxed, the edge of the liver can be often accurately defined, and in thin persons the fingers can even be partially insinuated behind the organ in this situation, the notch and projection of the gall-bladder being readily definable, especially if the latter be enlarged, thickened, indurated, or filled with gall-stones. By making a *point d'appui*, with pressure from behind by the left hand placed in the dorsal portion of the right lumbar region, the liver may be still more satisfactorily examined; the number, seat, size, density, and other characters of tumours in the organ, if any, may be often thus well defined. If any tumour can be thus isolated, note whether it present waving or pulsatile motion, fluctuation, a boggy feel, or a softened central part with or without depression, cancerous tumour (so-called Farre's tubercle). Palpate over the organ by a series of short, rapid, deep, vertical impressions of the fingers; in this way the state of the surface can often be ascertained with precision, and irregularities, nodulated elevations, or the thickly set hobnail elevations of cirrhosis detected. Hydatid cysts may likewise be often defined in a similar way.

§ 150. The size of the liver may be best determined inferiorly, and to the left, by careful palpation; its superior or thoracic limits are only to be defined by careful percussion; but the whole organ may be explored in all its limits by percussion, graduated according to the parts examined. A full, deep, dead tone (hepatic dulness) is elicited on the level of the eighth and ninth ribs by bold and firm percussion strokes. Superiorly, it must be remembered that the organ is covered by the right ala of the diaphragam, and rises as high as the fourth intercostal space, and is overlapped, for some two or more inches, by thin interposed lung-tissue before and behind.* With the alternate motions of descent and ascent of the diaphragm in inspiration and expiration, the seat of maximum dulness becomes alternately elevated and depressed. The following is Piorry's definition of the limits of normal hepatic dulness :—"The superior limit of hepatic dulness (semi-dulness) is situated at about two inches below the right nipple, or on a line with the fifth rib; its inferior border descends to the lower edges of the ribs. The vertical extent of hepatic dulness is two inches in the epigastrium, three inches in the right hypochondrium, and four inches laterally and posteriorly."

§ 151. Auscultation over the liver is not usually attended with positive results. Communicated sounds from the lungs, stomach, or other viscera, are frequently audible. Friction sounds are occasionally audible when lymphy exudation is thrown out on the peritoneal surface. If pulsation be present in the left lobe, communicated from an irritated aorta or aneurismal tumour, a soft murmur, *bruit de soufflet*, or a rasping or filing sound, may be audible.†

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* I think the relative position of parts in this situation is best understood by supposing an individual to be transfixed by a sword in the fourth intercostal space on the right side; the sword passes through successively from before backwards; the integuments, intercostal muscles, parietal pleura, lung-substance, diaphragmatic pleura, diaphragm, peritoneum, liver, peritoneum, diaphragm, diaphragmatic pleura, lung-tissue, parietal pleura, posterior intercostals, integuments.

† For the special diagnosis of Hepatic Disease, consult Dr. Budd's excellent work on the Liver.

§ 152. *Spleen.*—In health, this viscus, which is about three or four inches long and two to three inches wide, lies under cover of the left false ribs. By very careful and expert percussion, its limits may be defined; it is not, however, to be detected by palpation, unless when more than usually superficial. In disease, I have known it to reach as low down as the iliac fossa. If the preliminary history of the case indicate it, by reason of the patient having suffered from intermittent or remittent fever, or leucocythæmia, or cirrhosis of liver, explore the organ by careful palpation and percussion, and determine its vertical, transverse, and antero-posterior diameter. Carefully explore this viscus with the stethoscope, and note whether any venous hum, or other murmur, be audible.

§ 153. *Pancreas.*—Explore this organ by careful, deep, digital palpation in the umbilical and part of the right hypochondriac region. If definable, note whether it be enlarged, nodulated, dense, of stony hardness (scirrhus of pancreas), or otherwise changed in size or density; whether movable or fixed; and whether it receives a pulsation from the aorta.

§ 154. *Kidneys.*—These organs are deeply seated in the lumbar regions, and unless when they are greatly enlarged, present cancerous, hydatid or other tumours of considerable dimensions, or that one of them be movable and superficial, or that, on the other hand, the patient be extremely thin and emaciated, it is very difficult, if not impossible, to determine their actual condition by physical exploration, with any approach to accuracy.

§ 155. Ascertain whether the case be, or have been, a pyrexial or an a-pyrexial one (§ 6 to § 19). In all cases of suspected renal disease, determine previously the condition of the urinary secretion, according to directions in § 173. Inquire whether there be, or have been, rigors, nausea, vomiting, pain in the back or loins; scanty, bloody, smoky, porter-like, or otherwise discoloured urine, with or without deposit of any kind, specifying what. Observe whether there be heat, tenderness, pain, redness, swelling, bulging, or fulness, in the lumbar regions; note whether pressure in this region causes pain or uneasiness in the part, or in the course of the ureter. Make counter-pressure from behind with one hand, as already directed, and with the fingers of the other make deep and careful palpation (avoiding unnecessary force or violence) in the lumbar region in front, and observe whether the organ can be defined, and whether it be enlarged, nodulated, presenting tumours, impaction of calculi, or other discoverable abnormal state.

§ 156. The horse-shoe kidney may sometimes be detected by deep digital palpation. It is that state of the organs in which the two become united by a bridge of renal substance passing across the spine, and joining them by their inferior extremities.

§ 157. The movable kidney is that remarkable condition in which the renal vessels and ureters are much elongated, and the organ being completely enveloped by peritoneum, except where the vessels enter, is placed free in the cavity of the abdomen, and is moved about by the accidental pressure of surrounding parts. It not unfrequently comes to lie on the front of the abdominal aorta, receiving a pulsation which may be confounded with that of aneurism. Some patients seem to acquire or possess a certain voluntary power of changing the place of the organ when thus movable.

§ 158. *Ureters.*—These tubes may be explored in a direction downwards and inwards, from the seat of the kidneys in the lumbar regions to the hypogastrium. Inquire whether tenderness, occasional persistent or periodic or spasmodic pain, with moderate or extreme suffering, be felt in the course of these tubes. Explore the line of their direction by careful, deep, digital palpation. Observe whether round, sacculated, or nodulated tubes, with sense of fluctuation from contained fluid, can be defined in the direction indicated, or whether a calculous body can be felt in any part of their course.

§ 159. *Bladder.*—The state of this viscus can be determined by external physical exploration only when it is distended with urine, and rises above the pubes. By careful digital palpation and percussion its dimensions can be defined when it is distended. In febrile and hysteric cases, and in those with paralytic lesion from cerebral or spinal disease, never omit to explore daily the state of the bladder, and rely on no one's representations that the patient has passed a sufficient quantity of water; it is necessary to have ocular proof of the fact, and also to examine the bladder by palpation and percussion. The organ may be distended till paralysed, and yet a small quantity of water may dribble away daily.

§ 160. The special diagnosis of the following distinct forms of renal disease is to be made chiefly from the study of the characters presented by the urine:—Acute and chronic desquamative nephritis; Waxy and fatty states of the kidney; Granular disease of the kidney; Bright's disease properly so called; also Suppurative nephritis from external violence, retention of urine, or calculi in the kidney. Cysts, hydatids, cancer, tubercle, and other such diseases of the kidney, depend chiefly for their diagnosis on their presenting some of the characters of tumours.

The following summary view of the chief symptoms and signs of the more important renal diseases will be useful to the student.

§ 161. ACUTE DESQUAMATIVE NEPHRITIS.—Chilliness, rigors, pain in the back and loins, with more or less well pronounced febrile reaction, and the development of a marked pyrexial state, form the chief and most usual clinical features of the case; nausea, with or without vomiting, early developed pallor and puffiness of the face, with more or less of general anasarca, are soon superadded; they are present in some instances almost from the commencement. *State of the urine.*—The urine is usually scanty, high-coloured, smoky, porter-like, or deep blood-red. It is highly albuminous to heat and nitric acid; its specific gravity is not materially altered (1020 to 1025). *On microscopic examination*, which should be made daily and with the utmost care, there are usually found fibrinous casts and moulds of the uriniferous tubules, with included cells of renal epithelium, nuclei, and granular matter; blood-corpuscles, free and entangled in casts, are also present; the epithelial casts are very characteristic. This form of renal disease is of frequent occurrence in connexion with Scarlatina, and in this disease the urine should be daily examined for the above appearances, even when no œdema is noticed.

§ 162. CHRONIC DESQUAMATIVE NEPHRITIS.—This form of affection is often latent, and insidious in its mode of invasion; there are gradual loss of strength, emaciation, and blanching of the surface; nausea, water-brash, and vomiting are not infrequent; there is occasionally epistaxis; nocturnal and frequent daily micturition are observed; puffing of the face and anasarca of the lower extremities frequently occur, but dropsy is not necessarily present at the outset. Coma, epileptoid convulsions, hemiplegia, occur towards the end. *State of the urine.*—Fine, dust-like deposit in the urine, consisting of epithelial casts; the epithelial cells are mottled and granular; urine not necessarily albuminous at first, but permanently so in the late stages, increased in quantity, of low specific gravity (1006 to 1012), occasionally exhibiting deposits of lithates and oxalates. This affection is clinically associated with the gouty diathesis; there is diminished excretion of urea, and urea is found in the blood serum, and it is occasionally voided by the intestines.

§ 163. Waxy, Lardaceous, and Fatty Kidney.—With general history and clinical symptoms somewhat similar to those of the chronic desquamative nephritis, these affections are chiefly to be distinguished from it by the presence of waxy or oily granular casts in the urine, and by the tendency of the cases to a fatal issue.

§ 164. Granular Kidney, or Bright's Disease.—This very important disease is often insidious in its progress, and presents but ill-defined symptoms till the renal affection is fully and irretrievably established ; œdema commences about the face, and spreads thence. The urine is usually less copious than natural, but it is variable in quantity. Sometimes it is exceedingly scanty ; its specific gravity is low, 1005 to 1015, generally under 1020 ; it contains albumen in large, but variable quantities, while the urea and solids are diminished ; a peculiar destruction of the colouring matter of the blood takes place, so that the patient assumes a waxy yellowish white and somewhat cadaveric hue. The retention of urea in the system produces a tendency to coma and convulsions ; dyspeptic symptoms, with nausea and vomiting, are frequent, and there is a marked liability to low secondary inflammations of the serous membranes, and to the production of bronchitis, pneumonia, and diseases of the heart, liver, and brain.

§ 165. In the diagnosis of renal diseases it is of the last importance to ascertain whether the symptoms of albuminuria be of recent occurrence, its amount and persistence, or temporary character, and the diminution or suppression of the function of excreting urea. Note whether the urine is of natural, high or low specific gravity ; whether it is clear and free from sediment, or whether it deposits morbid materials, and what is the nature of such deposits ; whether tube casts exist, and whether they are composed of blood, fibrin, epithelial cells, and nuclei, waxy or oily granular matter, and whether the presence of fatty, waxy, or oily granules is an occasional or a constant phenomenon; also whether pus be present or not.

§ 166. *Passage of Urinary Calculi.*—Fits of severe spasmodic pain, with nausea, vomiting, syncope, painful retraction of the cremaster, shooting pains in the line of the ureters, indicate the passage of a calculus from the kidney, through the ureter to the bladder. The antecedent or coincident symptoms of the lithic, oxalic, or phosphatic diathesis, with a chemical and microscopical examination of the urine, will assist in forming an opinion as to the nature of the calculus.

§ 167. *Diabetes.*—Wasting, debility, hectic, emptiness and sinking at the stomach with sensations of hunger, chilliness of the surface with a furfuraceous or branny state of the skin, aching in the loins and legs, aversion to exercise, loss of virility, flatulence, acid eructations and costiveness, sponginess of the gums, looseness of the teeth, a faint odour like apples on the breath, dimness of vision, a feeble, oblivious and vacillating state of the mind, constitute the main features of this singular disease, the chief pathological character of which is the excretion of large quantities of sugar in the urine, this fluid itself being in unusual abundance, and having a greatly increased specific gravity. The quantity of urine has been known to reach 40 pints per day, and in an extreme case 200 pints, while the specific gravity reaches 1040, 1050, and even 1060. For the detection of sugar, see § 183.

## URINE.—CLINICAL EXAMINATION OF THIS FLUID.

§ 168. For practical clinical purposes, the urine must be considered under two distinct heads, viz. (*a.*) as the channel through which, independently of any alteration in the renal apparatus, increased elimination of excrementitious products from the system takes place, in connexion with, and as the result and exponent of, increased metamorphosis of tissue in the whole economy, or in any special part of it; and (*b.*) as the exponent of diseased processes, having their seat primarily, if not exclusively, in the renal apparatus.

§ 169. The following summary of the constituents of healthy urine will be useful for reference and comparison:—

HEALTHY URINE.—The reaction is acid (reddens litmus-paper). The normal quantity is 30, 40, to 50 oz. daily; the specific gravity of the *urina potus*, or that after drinking water or other fluid, is 1003 to 1009; of the *urina chyli*, or that after a meal, 1030; of the *urina sanguinis*, or that after a night's rest, 1015 to 1025; the healthy average specific gravity is 1020. (Prout.) The average amount of solids excreted daily by the urine in health may be estimated at between 600 and 700 grains. From the very convenient table calculated by Dr. Golding Bird, the amount of solids to the ounce of urine may be known approximately from the last two figures of the number which represents the specific gravity of the fluid. Thus, for all specimens of urine between the specific gravities of 1010 and 1040, the last two figures indicate very nearly the exact amount of solids to the ounce, i.e. if the urine have a specific gravity of 1015, 1020, 1024, the amount of solids to the ounce will be 15, 20, and 24 grains respectively: from 1025 up, the quantity of solids per ounce is from 1 to 3 grains more than the last two figures of the specific gravity.

§ 170. The following is a classified arrangement of the constituents of normal urine (Golding Bird):—

I. Organic Products.—1st. *Ingredients the result of destructive metamorphosis of the tissues taken up by the blood, and excreted from this fluid by the action of the kidneys*, viz. urea, uric acid, creatine, creatinine, colouring and odorous principles.

2nd. *Ingredients derived principally from the food during the process of assimilation*, viz. *in addition to those last mentioned*, hippuric acid, lactic acid, accidental constituents.

II. Inorganic Products.—3rd. *Saline combinations separated from the blood and derived from the food*, viz. sulphates, phosphates, chloride of sodium, and all soluble salts taken with the food, and often undergoing decomposition in the system.

4th. *Saline combinations taken up from the tissues during the process of destructive metamorphosis*, viz. sulphates and phosphates.

III. Ingredients derived from the Urinary Passages, viz. 5th, mucus of the bladder; 6th, debris of epithelium; 7th, phosphate of lime.

§ 171. The accompanying analysis by Becquerel may be regarded as pretty accurately representing the mean composition of healthy urine:—

Specific gravity 1017·01

| | | | |
|---|---|---|---|
| Quantity of Water | | | 971·935 in 1000 parts. |
| Solid constituents being | 28·066 | | |
| | Urea | 12·102 | |
| | Uric acid | 0·398 | |
| | Other organic matters | 8·647 | |
| Fixed Salts being | 6·919 | | |
| | Chlorine | 0·502 | |
| | Sulphuric acid | 0·855 | |
| | Phosphoric acid | 0·317 | |
| | Potash | 1·300 | |
| | Soda, lime, magnesia | 3·944 | |

The total quantities of each of the principal ingredients excreted by the urine in 24 hours in a healthy man, are as follows:—Urea, about 270 grains, or more than half an ounce; uric acid, somewhat more than 8 grains; chlorine, over 10 grains; sulphuric acid, more than 17 grains; phosphoric acid, over 6 grains; and of soda, lime, magnesia, and potassa, somewhat over 106 grains; but, as there is a considerable range within the limits of health, it is to be understood that some variation may occur in these quantities without actual disease being supposed to exist. Now the urine becomes the channel of increased eliminative action, i.e. of increased excretion of solids, in all cases in which increased metamorphosis of the tissues is induced in the system, unless when these excrementitious products are accidentally carried off by some other emunctory, or detained in the blood, or deposited in various situations within the body.

§ 172. All pyrexial states, whether febrile or inflammatory, are attended by increased metamorphosis, that is, increased destructive assimilation, or consumption, and removal of tissue-elements, which, as excrementitious products, ought, and do generally, in greater part, find their way into the urinary secretion. Thus it is that we have the quantities of urea, uric acid, colouring matter, creatine, chlorides, sulphates or phosphates, all or singly, increased in pyrexial states of the system. And this, though a pathological process, is so far a salutary one, and must not be confounded with a diseased state of the urinary secretion itself; on the contrary, the retention of these excrementitious products in the system during the course of pyrexial disease, and their non-excretion by the kidneys, constitute an important derangement in the general pathological process, and a serious element of additional disease. To examine and record daily the state of the urinary secretion, note its quantity, colour, reaction, specific gravity, and the presence or absence of cloud or sediment, with its distinctive characters, forms therefore an indispensable part of the physician's routine of duty at every clinical visit.

§ 173. The following classified view of the chief pathological states of the urinary secretion will be found at once simple and useful for clinical purposes :—

*A.* States of the urine in which, without accompanying renal disease, there is increase, diminution, or total suppression of the ordinary excrementitious products, viz. urea, uric acid, urate of ammonia or soda, colouring matters, the chlorides, sulphates, or phosphates, as happens in pyrexial states, whether febrile or inflammatory ; also in cases with suppression of the action of other excretory channels, as the skin, lungs, or bowels, and (in case of increased excretion) from unassimilated ingesta.

*B.* States in which, without accompanying renal disease, there is an excretion by the kidneys of matters not forming constituents of the healthy urine, as when in diabetes mellitus sugar passes off in the urine, constituting glucosurea ; in hepatic disease, when the elements of the bile are found in the urine.

*C.* States in which, *with* accompanying renal disease, there is a diminution in the amount of certain elements normally excreted by the urine, with or without the contemporaneous excretion of physiological elements, not found in healthy urine, and which ought to be retained in the system ; for example, diminution in the quantity of urea or uric acid, with or without the presence of blood, albumen, or fibrine.

*D.* States of the urine in which, with or without accompanying renal disease, there is an excretion of normal or abnormal elements not soluble in the urine when it cools, and constituting urinary deposits which may be thus classified, viz.

1. Deposits, more or less organised, and capable of assuming definite crystalline forms: namely, Uric Acid, and the Urates of Ammonia, Soda, or Potash, Uric Oxide, Oxalate of Lime, Oxalurate of Lime, Cystine.
2. Deposits mostly of inorganic origin: namely, Phosphate of Lime, Ammonio-phosphate of Magnesia, Carbonate of Lime, Silicic Acid.
3. Deposits of highly coloured elements: namely, Purpurine (Murexide), Cyanourine, Melanourine, Prussian Blue.
4. Deposits of non-crystalline elements: namely, Blood, Pus, Mucus, Organic Globules, Epithelium, Epithelial Casts of Uriniferous Tubules; Fibrinous, Fatty or Oily Casts, with or without embedded epithelial elements, as nuclei and cells from walls of renal tubules; Spermatozoa, Milk, Fatty Matter, Urostealith.
5. Elements developed in urine undergoing decomposition: as, Vibriones and other Infusoria, various species of Confervæ, Torulæ, &c.
6. Gravel or calculi of various kinds: as, Uric Acid, Oxalic Acid, Phosphates.
7. Various extraneous matters: as, Sarcinæ, hairs, starch corpuscles of various kinds, testa of wheat, portions of feathers, cotton and flax fibres, particles of deal-shavings (with the characteristic pores of the Coniferæ).

§ 174. Having noted the clinical characters of the case (see § 6 to § 19), ascertain the quantity of urine in ounces and drachms passed daily (i. e. in twenty-four hours), and the period at which the specimen to be examined was passed; note the colour, smell, specific gravity, reaction on litmus-paper (blue and red), and the presence or absence of iridescent surface pellicle, opacity, cloud, milkiness, or sediment. Many valuable indications may be obtained from the specific gravity alone. Thus in urine passed after a night's rest (urina sanguinis), or an average specimen of the twenty-four hours, a specific gravity of or under 1005 to 1010, may be taken to indicate almost certainly the presence of serious organic disease of the kidney, the excretion of urea being diminished or suppressed, and the presence of albuminuria may be suspected and generally demonstrated by the addition of a few drops of nitric acid or the application of heat, or both. A specific gravity of 1035 to 1040, and upwards, indicates almost equally surely (in an average specimen of the secretion of twenty-four hours) the presence of sugar in the urine, or the condition constituting glucosurea, the most prominent symptom of diabetes mellitus; great excess of urea will also increase the specific gravity considerably.

### SPECIAL TESTS FOR URINARY ELEMENTS ABNORMAL IN QUANTITY OR KIND.

§ 175. *Urea.*—If a drachm of urine be carefully evaporated to half in a watch-glass, and about half a drachm of nitric acid, free from nitrous acid, be added, irregular rhomboidal crystals of nitrate of urea will be thrown down, commencing in delicate feathering crystallisation round the edge of the glass; the process may be expedited by placing the watch-glass, after partial evaporation of the urine, on a cold surface or in a freezing mixture. The quantity of urea may be most readily estimated by the volumetric method, but if the solutions and apparatus for this process be not at hand, the following plan may be adopted:—

§ 176. In a weighed porcelain dish slowly evaporate 1000 grains of urine on a water-bath, and afterwards in a hot-water oven. When it ceases to lose weight, warm the residue with two or three successive quantities (half an ounce each time) of alcohol (sp. gr. 833); evaporate this alcoholic solution to dryness on a water-bath; dissolve what remains in a small quantity of lukewarm distilled water, and add pounded oxalic acid till no more will dissolve: the urea is now converted into oxalate of urea which crystallises out as the solution cools; the crystals may be collected on filtering-paper, and washed with cold distilled water. Save the washings, and collect any crystals deposited from them; dissolve in warm water all the crystals thus procured; digest the solution for a few hours with pounded carbonate of lime, at a temperature of 100° Fahr.; the carbonic acid will escape by effervescence, and an insoluble oxalate of lime will fall to the bottom; the urea remains in solution, and may be separated by filtration, evaporated to dryness on a water-bath in a weighed capsule, and when dry its weight can be readily ascertained. We thus have the quantity of urea in 1000 grains of urine, from which the total quantity excreted per diem may be readily estimated, if the quantity of urine passed in the twenty-four hours be known.

§ 177. *Uric Acid.*—The quantity of uric acid may be estimated with approximate accuracy. Observe whether a reddish brown tint be produced on the addition of a few drops of nitric acid to the urine. Uric acid sediment is insoluble in dilute hydrochloric and acetic acid, readily so in potash. If uric acid be in excess a small quantity of the urine treated with nitric acid, and after evaporation, when cold, with a few drops of ammonia, gives a beautiful purple and then pink colour from the development of murexide. If any deposit be present in the specimen, examine a small portion of it under the microscope with a good quarter-inch lens. Uric acid, if present, will be recognised by its square, oblong, tabular, colourless, or fawn-yellow, or reddish-brown crystals. Urate of ammonia will be known by its solubility when the urine is heated; and by presenting on the urine cooling, whitish, yellowish, fawn-coloured, brick-dust, or pink-red sediment to the naked eye, and innumerable spherical molecules and an amorphous powder under the microscope; spiculated spherules of superurate of ammonia or soda will be sometimes seen.

§ 178. When no spontaneous deposit of uric acid is present, the quantity in 1000 grains of urine may be thus estimated. Evaporate to dryness over a water-bath 1000 grains of filtered urine; treat the residue with dilute hydrochloric acid, and subsequently with alcohol; filter and dry the residue after these washings, at a temperature of 212° and weigh: the quantity of uric acid is thus directly found.

§ 179. In urine depositing uric acid, or urate of ammonia, the total quantity present, dissolved and in sediment, can be known as follows:—Add hydrochloric acid to the whole quantity passed at any given time, till the urine is smartly acid; filter it, and wash the residue on the filter with alcohol, then evaporate it to dryness; weigh, and the total quantity of uric acid in the specimen will be thus approximately found.

§ 180. Take any known quantity of urine, as an ounce or 1000 grains; mix it well with a small quantity of finely powdered charcoal, and filter. Evaporate the filtered urine to dryness (taking care not to char it by excessive heat); from the dry residuum dissolve out the urea by digestion and repeated washings with alcohol. (Treat this alcoholic solution as in § 176, for estimation of the urea.) Dissolve the residuum, after removal of the urea by alcohol, in lukewarm distilled water, and divide this aqueous solution into four parts, and mark them 1, 2, 3, 4. From part No. 1 precipitate the uric acid by adding hydrochloric acid; collect the uric acid on a filter and weigh it. From the residual acid solution precipitate the earthy phosphates by supersaturation with ammonia, collect them on a filter, and, after ignition, weigh them. Acidulate part No. 2 with nitric acid, and precipitate its chlorides by nitrate of silver: collect the white flocculent deposit on a filter, wash and weigh it. To No. 3 add a small quantity of hydrochloric acid, and by supersaturation with ammonia precipitate the earthy phosphates, which may be ignited and weighed. To part No. 4 add chloride of barium; collect, wash, dry, and weigh the precipitated sulphate of baryta, from which the sulphuric acid may be calculated.

§ 181. *Albumen.*—As already mentioned, the presence of albumen in the urine may be determined by adding nitric acid, which throws down a white flocculent deposit. It is coagulated by heat at a temperature of 160°; but when diluted, as in urine, requires a heat near the boiling point; it is usually well to apply both reagents successively, as a white deposit of nitrate of ammonia, soluble by heat, is sometimes thrown down on the addition of nitric acid, and heat causes a precipitate of earthy phosphates soluble in nitric acid.

§ 182. Boil one ounce, or 1000 grains, of urine, in which the albumen has been precipitated by nitric acid; filter and collect the coagulated albumen on a weighed filter, wash it well with distilled water acidulated with nitric acid, dry it by gentle and slow evaporation, and weigh. The result is the amount of albumen present in one ounce, or 1000 grains. This is not a strictly accurate process, but will readily answer for daily clinical examinations.

§ 183. *Sugar.*—The presence of sugar may be suspected in all specimens of urine with a specific gravity up to and above 1040; if kept for any time it evolves a melassic smell, attracts flies, generates torulæ, recognisable under the microscope, and sugar crystallises out from any drops of it which fall in situations where they are allowed to evaporate undisturbed. Take one ounce or 1000 grains of the urine; evaporate it to dryness on a water-bath; treat it with dilute alcohol, filter, and allow it to crystallise in a cool place; and, after one or two days, abundant cauliflower-like crystals of grape-sugar will be formed, which may be weighed directly. The polariscope is, however, the surest and most expeditious means of estimating the quantity of sugar in urine, or any such fluid.

The presence of sugar may be more certainly determined by the following tests —

§ 184. *Potash, or Moore's Test.* Boil equal quantities of urine and liquor potassæ; a rich brownish colour is soon produced if sugar be present, and the well-known smell of caramel, or burned sugar odour, is evolved.

§ 185. *Capezzuoli's Test.* Add a few grains of blue hydrated oxide of copper to urine, and then a small quantity of potash; a reddish colour is produced, which passes into yellow in about four hours.

§ 186. *Maumene's Test.* Prepare some white merino by steeping it in bichloride of tin; a deep brownish spot or stain is produced when it is dipped in diabetic urine and heated.

§ 187. *Trommer's Test.* On boiling urine with sulphate of copper and potash, the red suboxide of copper falls to the bottom, reduced by the action of the sugar.

§ 188. *Pettenkofer's Test* depends on the production of a violet colour, when bile and sulphuric acid are added to urine containing sugar.

§ 189. *Barreswil's Fluid.* The cupro-potassic solution of Barreswil produces, when boiled with diabetic urine, a deposit of the fawn-coloured suboxide of copper.

§ 190. *Fermentation Test.* A small quantity of yeast added to diabetic urine causes fermentation and the production of carbonic acid; if the experiment be conducted on a known weight of urine, and in a suitably graduated bottle, the amount of carbonic acid produced enables us to determine the quantity of sugar present.

§ 191. *Bile.—Iridescent Test.* The presence of bile may be detected as follows: place a small quantity of urine, in a very thin stratum, on a clean white plate; add a drop or two of nitric acid, allowing it to flow gradually towards and into the urine; pale-green, violet, pink, and yellow colours, with a beautiful iridescent effect, are rapidly and successively produced.

§ 192. *Heller's Test.* Add a small quantity of blood-serum, or white of egg, to the suspected urine. Shake these well together, and add a small quantity of nitric acid; if bile is present the coagulum thrown down will have somewhat of a dull green or bluish colour.

§ 193. *Pettenkofer's Test.* Remove any albumen, if present, by coagulation. To a small quantity of the urine add two-thirds of sulphuric acid drop by drop; then add a grain or two of sugar, or a drop of syrup; shake the mixture and let it stand for a few minutes, when, if bile be present, an intense red colour with a tinge of violet will be produced.

§ 194. URINARY DEPOSITS.—The various forms of urinary deposits are most readily and easily recognised by their microscopic characters.

§ 195. *Urate of Ammonia.*—Urine depositing urate of ammonia is acid in reaction, variable in specific gravity, 1012 to 1030; it may be amber in colour, or brownish, reddish-brown, or more or less fawn-coloured: the deposit itself may be white, pale, fawn-coloured, like red brick-dust (lateritious), or even bright pink, staining the vessel into which the urine is passed of a bright pink colour, from excess of purpurine or murexide. The deposit of urate of ammonia takes place only when the urine has cooled, and it disappears with the greatest readiness on the application of heat; liquor ammoniæ and liquor potassæ dissolve deposits of urate of ammonia, but render the urine slightly turbid from precipitation of the earthy phosphates. If a drop of the urine be placed under the microscope, the deposit is seen to consist of innumerable minute spherules, sometimes adhering together so as to form little moniliform or bead-like threads; crystals of uric acid will be occasionally found mixed up with the urate of ammonia, especially if the urine have been kept for any time. If a small quantity of hydrochloric or nitric acid be added to a specimen of the urine while warm, it will be found on cooling to present under the microscope innumerable crystals of uric acid.

§ 196. *Uric Acid.*—The urine is usually of a deep amber, brownish, or reddish-brown tint; it reddens litmus paper, and has generally a specific gravity above 1020. The uric acid occasionally exists as an iridescent pellicle on the surface of the urine; if in large excess it is partially deposited when the urine cools, but some of the acid generally remains in solution till a small quantity of hydrochloric acid be added.

§ 197. Urine suspected to contain uric acid in excess may be allowed to rest in a tall glass vessel after adding a few drops of hydrochloric acid; after a few hours the supernatant fluid may be decanted, when a portion of the abundant deposit of uric crystals may be examined under the microscope.

§ 198. The size, form, and colour of uric acid crystals seem to be very variable. They are at times white (always so when chemically pure), sometimes fawn-yellow, occasionally of a reddish-brown or orange-tint. The characteristic form is that of a lozenge-shaped crystal (modification of the rhombic prism), but any of the following shapes may occur: larger or smaller square or cubical tables; oblong plates with fissured ends, and with or without striated lines within; oblong thick prisms adhering together in variously disposed clusters; triangular prisms adhering to a thread, hair, or minute filament of any kind; navicular or boat-shaped crystals; very large, thick, irregularly square, or cubical crystals, sometimes prolonged into obeliskoid masses. These crystals are sometimes so large as to be visible to the naked eye, and when of an orange-red colour the urine seems to contain granular masses of red pepper.

§ 199. *Purpurine* (*Murexide*).—The quantity of pink or reddish colouring matter present in the urine is sometimes such as to give this fluid an appearance of blood being mixed with it. It is always associated with urate of ammonia. Purpurine is soluble in alcohol, and may be separated from a deposit containing it by digestion with alcohol; the addition of hydrochloric acid and ammonia to urine containing purpurine, produces a beautiful pinkish-purple colour.

§ 200. *Cystine.*—"This substance, when present in the urine, is a nearly white or pale fawn-coloured pulverulent deposit, much resembling the pale variety of urate of ammonia;" the urine is always turbid when emitted. The deposit of cystine is readily soluble in ammonia and the fixed alkalies, potash and soda and their carbonates, but not in carbonate of ammonia; it is insoluble in very dilute hydrochloric acid and strong acetic acid, and does not disappear as urate of ammonia does when the urine is heated. Crystals of cystine may be recognised under the microscope as six-sided laminæ. Urine containing this deposit is usually of lower specific gravity than natural.

§ 201. *Oxalate of Lime.*--Cases presenting hypochondriasis, melancholy, emaciation, lassitude, and other obscure phenomena of ill health without discoverable organic disease, will often be found to exhibit a deposit of oxalate of lime in the urine, which is amber-coloured, little if at all abnormal in appearance, reaction, or specific gravity. An excess of urea or uric acid is occasionally present, but this is not a necessary condition.

Allow the suspected urine to rest in a tall glass vessel and after some time decant it carefully, reserving the very lowest stratum, which may be heated in a watch-glass; this will dissolve any urate of ammonia that may be present, and precipitate the crystals of oxalate of lime. Under the microscope (D. 500) minute octohedral crystals will be observed, they appear like little bodies marked with a very distinct and regular cross; occasionally the deposit of oxalate of lime assumes the appearance of minute dumb-bell-shaped bodies.

§ 202. *Earthy Phosphates.*—Unless these salts are in excess, the urine is not necessarily alkaline; if present for a considerable time the urine is generally pale, copious, and of low specific gravity; phosphates may appear in the urine as an occasional deposit (after eating largely of bread, Golding Bird); the urine is sometimes brown in colour, fœtid, and containing ropy mucus. The following are the salts most commonly present: the ammonio-phosphate of soda, ammonio-phosphate of magnesia, phosphate of lime. Deposits of the phosphates are white, soluble in dilute hydrochloric acid, and insoluble in ammonia and liquor potassæ; they are unaltered by heat.

Under the microscope the neutral triple phosphates present well-defined and large prisms; stellar crystallisation of them is occasionally to be observed; penniform, feather-shaped, and leaf-like crystals are likewise occasionally met with; phosphate of lime and carbonate of lime have very indistinct and ill-defined microscopic characters. Alkaline urine depositing earthy phosphates in more or less abundance occurs in connexion with spinal disease.

§ 203. Such extraneous matters as blood, mucus, epithelium, organic globules, torulæ, sarcinæ, confervoid bodies, vibriones, and spermatozoa, are readily to be distinguished under the microscope by the well-defined characters of their several histological elements; they will be better understood from actual inspection, or the examination of good plates, than from any verbal description.

§ 204. 9. STATE OF THE CUTANEOUS SYSTEM.—Under this head is comprised the special diagnosis of the various classes of skin diseases; but within the limits of the present work it will not be possible to do more than give a brief general outline of the essential pathological conditions of cutaneous diseases. At p. 14 will be found a simple and comprehensive classification of skin diseases.

§ 205. Some of the following primary pathological conditions may be recognised in the majority of cases of skin disease with which we have ordinarily to deal in practice: *exanthema*, a rash; *vesicula*, a vesicle; *bulla*, a bleb; *pustula*, a pustule; *papula*, a papule; *squama*, a scale; *tuberculum*, a tubercle; *macula*, a stain; *purpura*, a purple spot.

§ 206. (1.) *Exanthemata* (Rashes).—Affections presenting variously formed, irregular-sized, superficial red patches, which disappear on pressure, but reappear when the pressure is removed, and eventually terminate in desquamation. The diseases of this class are all attended with pyrexia, some to a very marked degree, as scarlatina and erysipelas. The exanthemata comprise scarlatina, morbilli, rubeola, erythema, erysipelas, roseola, urticaria.

§ 207. (2.) *Vesiculæ* (Vesicular diseases).—Affections presenting small acuminated or rounded elevations of the cuticle containing lymphy serum, which is at first clear and colourless, but afterwards becomes turbid, opaque, or pearl-coloured; they are succeeded by scurf, or laminated scales. Most of these affections are attended by pyrexia. The vesiculæ comprise eczema, herpes, scabies, miliaria, varicella.

§ 208. (3.) *Bullæ* (Blebs).—These affections present *blebs*, or very large vesicles, with a clear and usually transparent fluid. Bullæ comprise pemphigus, pompholix, and rupia.

§ 209. (4.) *Pustulæ* (Pustular diseases).—Affections presenting numerous minute, somewhat spherical, elevations of the cuticle containing pus; two varieties of pustule are recognised: one, the *phlyzacium*, or pustule raised on a hard, circular, inflamed base; the other, *psydracium*, smaller and without surrounding inflammation. Several but not all the diseases of this group present well-marked pyrexia.

Pustulæ comprise variola, vaccinia, ecthyma, impetigo, acne, mentagra, porrigo, equinia.

§ 210. (5.) *Papulæ* (Papular diseases.)—Affections presenting a small, solid, flattened, rounded, or pointed elevation of the cuticle, generally of a reddish aspect, and perceptible to the finger passed gently over the surface; they are sometimes, but not always, attended with pyrexia.

Papulæ comprise lichen, prurigo.

§ 211. (6.) *Squamæ* (Scaly diseases).—Affections presenting numerous detached, scaly, thickened, whitish and opaque laminæ of cuticle, consisting of many flattened epithelial cells aggregated together, and covering large or small red elevations of the skin. They are usually very chronic diseases, and seldom attended with pyrexia.

Squamæ comprise psoriasis, pityriasis, ichthyosis.

§ 212. (7.) *Tubercula* (Tubercular diseases).—Affections presenting at the outset small, hard, at first indolent, elevations of the cuticle and derma, subsequently ulcerating, suppurating, and often attended with very great destruction of parts. They are very chronic, and seldom pyrexial, except as the result of inflammatory action set up in the neighbourhood of the ulcerated parts.

Tubercula comprise lepra tuberculosa, lupus, molluscum, frambæsia, cheloidea.

§ 213. (8.) *Maculæ* (Diseases presenting stains or marks).—Affections exhibiting permanent discoloration of the skin; they are chronic and a-pyrexial.

Maculæ comprise lentigo, ephelides, nævi, and vitiligo.

§ 214. (9.) *Purpura* (Purpuric diseases, the Purples).—Affections presenting minute scattered spots, or distinct patches, or large surfaces of a more or less dark or livid purple tint, persistent and not disappearing on pressure, attended with low states of the system, and often associated with similar spots on the mucous and serous surfaces. This class of affections is often pyrexial—sometimes epidemic (especially in Ireland).

Purpura comprises purpura hæmorrhagica, purpura simplex.

§ 215. It is to be observed that scarlatina, morbilli, rubeola, variola (and vaccinia?), though often classed as skin diseases, belong more properly to the third group of fevers, viz. the Eruptive fevers.

§ 216. The more rare forms of skin diseases, as pellagra, radesyge, and the several varieties of leprosy and elephantiasis, we shall not further notice in this place.

§ 217. *Dermatophyta.*—Under this head it has been attempted to group those cutaneous affections which present the common, if not essential, character of minute cryptogamic growths variously interspersed with elements of the normal skin, and with certain pathological products, as pus, ichor, &c. The diseases in which the constant presence of a minute cryptogamic vegetation has been proved are, mentagra or sycosis menti, porrigo, and pityriasis versicolor.

§ 218. The next section gives a view of the most recent classification of the animal parasites which infest the human subject. Some only of these invade the cutaneous surface, the others find a habitat on the mucous surface and in the centre of organs.

### ANIMAL PARASITES OF MAN.

I. Infusoria (vibrio, polygastrica, &c).

II. Vermes:—

A. Platyelmia, C. Vogt.—Cestoidea: α. Cestoidea vera: 1. Tænia solium, L.; 2. T. nana, Sieb; 3. T. mediocancellata, Küchenm.; 4. Bothriocephalus latus, Bremser. β. Cestoidea cystica (cestoïdes en voie de developpement): 1. Cysticercus cellulosa, Rud.; 2. Echinococcus hominis, Rud.

Trematoidea: 1. Distoma hepaticum; 2. D. lanceolatum; 3. D. ophthalmium; 4. D. hæmatobium; 5. D. heterophyes; 6. Monostomum lentis; 7. Hexathyridium pinguicola; 8. H. venarum.

B. Nematelmia (*syn.* Nematoidea): 1. Filaria medinensis; 2. F. oculi; 3. F. hominis bronchialis; 4. Trichocephalus spiralis; 5. Tr. dispar; 6. Strongylus longevaginatus; 7. S. gigas; 8. Ancylostomum duodenale; 9. Spiroptera hominis; 10. Oxyurus vermicularis; 11. Ascaris lumbricoides; 12. A. alata.

III. Articulata:—

A. Crustacea: Pentastomum constrictum.

B. Acarina: 1. Sarcoptes scabiei; 2. Acarus folliculorum.

C. Insecta: *Aptera:* 1. Pediculus capitis; 2. P. pubis; 3. P. vestimenti; 4. P. tabescentium.—*Diptera:* 1. Pulex irritans; 2. P. penetrans; 3. Œstrus hominis.

§ 219. 10. Malformations and Wounds, or Injuries of any Kind affecting the Head, Trunk, and Extremities.—Investigations under this head belong to the province of surgery, and are not for the present considered in this work.

§ 220. III. Therapeutic Appliances.—Under this head record daily the patient's food, specifying whether full, middle, or low diet; the medicines prescribed for him, specifying the quantities and doses, and the kind and amount of stimulants, if any, ordered for him; likewise such appliances as blisters, plasters, ointments, lotions, &c. Note from day to day the effects produced by the plan of medication employed, specifying the particular effects of the medicines taken.

§ 221. IV. Daily Progress of the Case.—To ascertain and record faithfully the daily progress of a case is of the utmost consequence to the patient, the physician, and the student, and is, in fact, as indispensable as to make a clear diagnosis at the outset.

When the condition of the case is fully mastered and recorded on the first day, by carefully (though after some little practice, it may be *most rapidly*) going through the series of inquiries and examinations specified under the several sections of II., in the order there given, and without any omission or oversight, its progress is readily ascertained from day to day by repeating the same inquiries and examinations in the same order, and reporting carefully any changes, additional symptoms, or new signs developed since last visit. The effects of medicines must likewise be carefully inquired into and noted; also the kind and amount of stimulants exhibited (if any), and the changes (if any) in the patient's diet. Therefore, under the head of daily progress, examine seriatim and record *daily*, in full at first, afterwards in any convenient and intelligible abbreviations, the state of (*at least*) the pulse, skin, tongue, stomach, bowels, heart, lungs, urinary organs, and urine; also the effects of medicines and stimulants.

All this may seem tedious routine. It can only be answered that without it medicine is neither to be learned nor taught, and, what is of more consequence, it cannot be practised with safety to our patients. Tedious and irksome, however, as such daily routine inquiries and examinations may seem, a very short amount of practice renders it second nature; and the experienced hand soon comes to accomplish in one minute what costs the novice a good half hour's oral, ocular, aural, manual, and mental labour.

§ 222. V. TERMINATION OF THE CASE.—If partial or complete convalescence be established, record the day and date on which the patient leaves hospital. If it be a case in which organic lesion of any important viscus has been developed during the patient's sojourn in hospital, as of the heart in rheumatic fever, the lungs in the course of typhus, &c., make a careful record of the state of parts as determined by minute physical exploration on the day of his leaving hospital.

If the case prove fatal, after having noted the circumstances attending death, refer to Section II. for full instructions for conducting a complete post-mortem examination of the body.

# SECTION II.

## POST-MORTEM EXAMINATION.

### GENERAL DIRECTIONS.

§ 223. PATHOLOGICAL Anatomy is the basis of all that is exact in medicine; to make a *post-mortem* examination well becomes, therefore, one of the most essential accomplishments of the practical physician. To make and record a post-mortem examination which shall be instructive to the student or physician who makes it, and of use to medical science, it is necessary that it shall be done completely and effectively. It must also be done skilfully, expeditiously, and with both dexterity and perfect cleanliness; thus performed you may and ought to be able to conduct a post-mortem examination from beginning to end, including every cavity and organ of the body, no matter how diseased, in your best dress suit, with only the cuffs of your coat and shirt-sleeves turned up. This you will at once see implies a mode of procedure very different from that revolting one which is unfortunately only too often to be witnessed, in which everything about the subject is hacked, mangled, and bungled, and everything about the operator bloodied and soiled; the whole affair being a combination of butchery and botchery unparalleled.

And yet to conduct a *post-mortem* with the utmost expedition, and in a very complete and satisfactory manner for all ordinary purposes, it is only necessary to have at hand one or two scalpels, a good saw, a fine scissors, and a bowel scissors, two or three trays, dishes, or suitable glass vessels, a sponge, and a free supply of water, but this last is indispensable.

When proceeding to make a post-mortem examination, two students, at least, should act in concert (in the absence of the physician or surgeon), one to conduct the manual operations necessary, the other to record the morbid appearances at the actual moment of observation, as concisely as may be, but as faithfully as possible. Use abbreviations, if you will, but leave no important details to be recorded "at leisure" (which never comes); if you neglect this rule you will lose many valuable observations, and you will be sure to fall into confusion, if (as not unfrequently happens with clinical clerks) two or more post-mortems have to be made and recorded on the same day. Note at the outset the date and hour of the post-mortem, and the name, age, sex, and condition or trade of the subject, the disease supposed to have caused death, and the date and hour of death. If there be a thermometer in the post-mortem room (as there ought to be), take the temperature.

## EXTERNAL APPEARANCES.

§ 224. Much important information is to be gained under this head of inquiry. The cause of death may be often diagnosed from the external appearances by the experienced eye. Note the external appearances of the body, whether fat and plump, or lean and emaciated; observe whether rigor mortis be present or not; note whether there be any unusual contraction of any sets of muscles, as of the flexors or extensors of the extremities; whether the hands are clenched and the feet extended, with the toes pointed, the sole arched, and the heels drawn up. See if there be any indications of post-mortem movements having taken place (as in cholera).

Observe whether there be any unusual warmth remaining in any parts of the trunk or extremities, also whether there be any unusual or abnormal *post-mortem* elevation of temperature; place the thermometer in the axilla, mouth, or anus, ("Cholera Cases and Cases of Constitutional Gangrene. Lyons's Blue-Book Report on Pathology of Diseases of Army in the East, Crimean Campaign.")

§ 225. Observe the coloration of the surface generally, whether blanched or livid and congested; and of the face, neck, hands, and feet, as also of dependent parts, whether they are blue and livid or otherwise remarkable. Note whether dark-coloured arborescent veins be visible on any part of the cutaneous surface; also whether patches of ecchymosis, purpura, purpuric or other spots, or unusual marks of any kind, be present. Observe whether the cuticle be adherent or readily detached and disposed to peel off; whether any vesications, blebs, or collections of red-coloured serum, be observable on any portion of the integuments; whether any and what parts be œdematous or otherwise swollen; observe the orifices of the nose, mouth, anus, and vagina, for marks of hæmorrhage or violence.

§ 226. *Chief Pathological Appearances to be sought for externally.*—(a.) Excess or absence of rigor mortis; (b.) excessive muscular contraction in extremities, hands, and feet; (c.) post-mortem movements and post-mortem elevation of temperature; (d.) marks of violence received during life, ecchymosed patches; (e.) purpuric stains, patches, spots, or cutaneous eruptions of any kind; (f.) signs of early decomposition of integuments, detachment of cuticle, and formation of vesicles of blebs filled with bloody serum.

§ 227. CRANIAL CAVITY.—In making a complete *post-mortem* examination commence with the Cranial Cavity. Make an incision from ear to ear across the vertex, and reflect the flaps towards the face and back of head; note the condition of parts as to vascularity, whether vessels are gorged or not. Carry an incision with the scalpel through pericranium and temporal muscles round cranium, ¼ to ½ an inch above superciliary arches, external meatuses of ears, and a little above occipital protuberance; saw through both tables of the skull, the inner with great care, in this line, working with short, quick, and firm strokes of the instrument: by a skilful hand the calvarium may be far more rapidly removed by the aid of a hammer with a chisel-edged nose; by using short strong strokes, and striking quick successive blows in the line just indicated, both tables may be rapidly broken through, and the calvarium detached in an inconceivably short space of time by an experienced hand.

§ 228. Note the appearances presented on inside of Calvarium when detached, whether any bony spicula project from it, whether depressions from glandulæ Pacchioni are very deep; the osseous substance is here sometimes eaten quite through. Run your eye rapidly, but carefully, over the ramiform arterial depressions, that for the middle artery of the dura mater especially; note if there be anything abnormal, spicula of bone, &c., and whether the vessels have been ruptured at any point.

§ 229. After the Cerebrum and Cerebellum have been removed, examine and note the condition of the lateral and petrosal sinuses, whether much gorged with blood or not; rapidly pass the finger over the surface of the basis cranii, and note any abnormal elevations or depressions, any projecting spicula of bone, &c.; tap with the handle of the scalpel, or scrape the surface of petrous portion of temporal bone. (Memo. possible occurrence of abscess in.)

§ 230. Having removed the calvarium, observe carefully the surface of the dura mater, note its veins and arteries, remark whether blood, pus, or serum, has been effused between it and the bone.

§ 231. Slit up and examine carefully, and note the condition of the sinuses and veins, whether gorged or otherwise.

§ 232. Examine the arachnoid on the superior and inferior surfaces, and note whether it be opaque in points or patches, whether nodules of lymph be observable in it, also, especially in children, whether tubercles are deposited in it, and whether there be an appreciable quantity of clear, straw-coloured, or bloody serum effused.

Estimate serous or sanguinolent effusion approximately in drachms by guess; or, better, by actual measurement in suitable glass vessels, marked with oz. and drachms. (Natural quantity 1, 2, or 3 drachms at basis cranii, not bloody.)

§ 233. Note condition of pia mater as to state of its vessels, and observe carefully whether there be blood effused from them at any point.

Observe the surface of the cerebral hemispheres; remark whether they are pale or vascular, hard or soft, whether there be tubercular deposits in, or impinging on, their substance.

§ 234. Make the horizontal sections with large-bladed knife or razor, to show Centrum ovale minus, and Centrum ovale majus. Observe and note appearances presented, whether central substance be hard, or soft and watery, or dry; whether the red points (sections of minute vessels) be very numerous, so as to give the *sablé* condition (as if the brain was sanded over with a red powder).

§ 235. Remove Corpus callosum with care, and note in drachms (measuring if possible) the quantity of serum in lateral ventricles. Note the state of the choroid plexuses, whether much gorged or otherwise. Turn the brain base upwards; examine the subarachnoid spaces, trace carefully the chief arteries inosculating in circle of Willis; observe whether any of them be plugged by coagulum, by lymphy vegetations, atheromatous deposit, or other substance.

§ 236. Make an oblique section from the decussation of the pyramids in the medulla oblongata, through the crus cerebri, optic thalamus, and corpus striatum. Note the state of the white or grey cerebral substance on either side of this section as to firmness, softness, punctiform vascularity (*sablé* condition), presence of blood extravasated, or other appreciable condition. Make cross sections in all directions through the cerebral substance, and note the abnormal appearances, if any.

§ 237. CEREBELLUM.—Make oblique sections through the Crus Cerebelli on either side, into and through the hemispheres; note appearances presented, and any abnormal state as to colour or consistence. Rapidly note the condition of the various cerebral nerves.

§ 238. SPINAL CANAL.—Having made a longitudinal incision about one inch on either side of the prominences of the spinous processes, and cleared away the muscular structures, break through the laminæ of the vertebræ with a mallet and chisel. Or, better still, with the rachitome or double-bladed saw of Charrière, cut through these same processes; this latter operation may be executed very rapidly after a little practice; a chisel will be useful to prize up the posterior fragments of the vertebræ when cut through in either of the foregoing ways.

The same class of observations may be repeated seriatim for the spinal cord and its membrane as for the cerebrum, and precisely the same *pathological appearances* are to be sought for. Longitudinal and cross sections of the cord may be made in the cervical, dorsal, and lumbar portions.

§ 239. *Chief Pathologicol Appearances to be sought for in Cerebrum and Appendages.*—(a.) Engorged state of vessels; (b.) Increased vascularity of membranes; (c.) Of central substance (*sablé* condition); (d.) Effusion of blood in or upon cerebral substance, as upon surface of cerebral or cerebellar hemispheres, or in substance of brain, as in corpus striatum, constituting clot of sanguineous apoplexy; (e.) Results of deficient supply of blood from stoppage by blood-clot, valvular vegetations, lymph nodules, or foreign substance, of arterial trunks, as internal carotid, or vertebral, or their branches (examine arteries in circle of Willis, also the anterior, middle, and posterior cerebral arteries; carefully inspect the minute vessels in the fissure of Sylvius); (f.) White softening, or yellowish broken down appearance of cerebral substance, result of inanition; (g.) Red softening, Ramollissement rouge of authors (result of inflammation); (h.) Abnormally moist states of cerebral substance, serous infiltration, constituting, if excessive, the Serous apoplexy of authors; (i.) Deposits of tubercle or cancer, in membranes (arachnoid) on or in cerebral hemispheres; (k.) Hydatids on or in membranes or cerebral substance; (l.) Tumours of any kind; (m.) Defects of development in any parts of cerebral apparatus.

§ 240. Where indicated, examine portions of grey or white cerebral substance under the microscope, with a power of D. 300 to 500. Observe whether compound granular cells or pus corpuscles be present. Take the specific gravity of the grey and white matter. See § 342.

§ 241. CAVITY OF THORAX.—To perform a complete post-mortem examination of the organs subservient to the process of respiration, it will be necessary to make a longitudinal incision from the symphysis menti, through the mesian line of the neck, and along the sternum to the xiphoid cartilage; as the abdomen is subsequently to be examined, this line of incision may be completed to the symphysis pubis, passing a little to the left of the umbilicus. Recommencing above, carry the scalpel through the muscles attached to the symphysis menti and adjacent parts of the lower jaw, opening the floor of the mouth; the tongue will be thus exposed, which may be grasped with the fingers or with a forceps. Draw this organ in a direction downwards and forwards, and, with the scalpel, free it from its connections on either side; as you abstract the sides of the base of the tongue, you may now, if you so desire it, bring away the tonsils and half-arches of the palate. Use the scalpel lightly and dexterously, and the larynx, the lower part of the pharynx and œsophagus, and the trachea may be removed with little trouble. These parts may be detached for separate examination, or, by waiting till the thorax is fully opened, may be removed in conjunction with the lungs.

§ 242. To make a full and satisfactory post-mortem in almost any of the more important thoracic lesions, it is advisable to adopt the foregoing procedure in order to secure an examination of the mucous membrane of the larynx and trachea, in connection with that to be instituted into the bronchial and pulmonic affection. As, however, it is often desired, for the sake of expedition, to confine the investigation to the thoracic lesions, the cavity of the chest may be opened as follows:

Commence the vertical incision at the fourchette of the sternum, or an inch above it, and carry it as before to the symphysis pubis. In the majority of cases, and for the most complete post-mortem examination, it will not be necessary to further disfigure the body than by the longitudinal incision above described, whether commencing at the symphysis menti or the fourchette of the sternum (cross incisions through the abdominal walls are to be expressly avoided, except when found to be absolutely necessary for the full and satisfactory exploration or removal of tumours, herniæ, portions of perforated intestines, &c.).

§ 243. In making sections through the integuments and muscles, note whether there be any unusual appearances, whether there be ecchymosis or an engorged state of the muscular substance, also whether the muscular fibre be firm or abnormally soft, fishy, or sizy; note if the fibre retracts sensibly when cut *across*. Dissect back the integuments and muscles in one mass on either side towards the lateral aspects of the thorax, and beyond the line of union of the ribs to their cartilages, freeing the pectorals and the origins of the obliqui and recti from the ribs with long bold sweeps of the scalpel, the edge of which should be borne at an angle of 45° to the surface of these bones. With a strong "cartilage knife" cut through the costal cartilages close to their junction with the ribs: if ossified, the saw must be employed; but be careful to leave as smooth a surface as possible (the integument may be folded round the edges of the ribs when sawed through, in order to save the hands of the operator from scratches and cuts). When the cartilages are all divided, commence to raise the triangular lid, formed by the sternum and cartilages, from its attachments at the left inferior angle, cutting close to the under surface of the sternum, and freeing with the scalpel the attachments of the diaphragm. If the edge of the knife be not turned towards and kept close to, the back of the cartilages and sternum, the pericardium will be opened, its contents, if any, evacuated, and the pathological condition it presents (if any) more or less injured.

§ 244. Using the scalpel as directed, and partly by traction, the sternum and cartilages may be rapidly raised like the lid of a box; if its upper piece be now deeply incised with a strong knife, or sawn through, the whole may be thrown back. In some instances it will be preferable to detach the sternum at the sterno-clavicular articulations, as when we desire to examine the larynx and trachea; and in others it will be found useful to saw across the clavicles at the junction of the internal and middle thirds, so as to give ample room for inspecting and removing diseased parts, as aneurisms or tumours of any kind. In sawing through the clavicles, avoid injuring the subclavian and innominate or brachio-cephalic veins.

§ 245. *Organs to be examined 'in situ' first.*—Observe and note the condition of parts presented when the sternum is removed; remark whether the lungs have collapsed or remain prominent or protrude; whether they are ash-grey or dark, congested or otherwise discoloured, crepitant or solidified; note whether the pericardium be saccular and prominent, and whether it contains any appreciable quantity of fluid. Observe whether the pleural cavities, either or both, contain serum, pus, or blood. If the incision in the neck have been made, and it is desired to examine the larynx and trachea, the whole respiratory apparatus, with the pericardium and heart, may be removed together from the body for more careful dissection and examination on a post-mortem tray or suitable dish. For this purpose detach the tongue, with the tonsils and lower part of pharynx, then the larynx, trachea, and œsophagus, ripping them from their attachments to the front of the spinal column by means of the fascias and areolar tissue connections, with a few touches of the scalpel here and there. If the vessels in the neck and the subclavian arteries and veins be tied and cut across, and the hand be passed behind the trachea and œsophagus as they enter the upper orifice of the thorax, and forced downwards and outwards on either side, the roots of the lungs with the aorta and œsophagus may be freed from their connections, and with the occasional use of the scalpel the whole viscera of the thorax may be readily detached from their posterior connections. Owing to adhesions of the pleuræ, the utmost difficulty is sometimes experienced in removing one or both of the lungs; and in attempting to use force the pulmonic substance is broken through, and the pathological appearances injured or destroyed with escape of the contents of abscesses, vomicæ, &c., and the complete breaking up of the diseased tissues. Under such circumstances of adherent pleura, I have been for many years in the habit of adopting the following expedient, which, when carefully put in practice, I have always found successful in my own and other hands. When the pleuræ are found to be at all strongly adherent, use no force to detach the lungs from them; but, on the contrary, your object should be to bring away the pleuræ (both visceral and parietal layers), and lungs together, intimately united as they are, as the former constitute the most efficient protection and support for the delicate pathological elements of the latter. Carry an incision with the scalpel through the pleura down to the ribs and intercostal muscles, at some distance from the adhesion, or along the whole side if the adhesion be general; with the nail or the handle of the scalpel detach the pleura from the ribs and intercostals for a short distance, then insert two or more fingers, and finally the hand, with the palmar aspect towards the pulmonic substance, and continue to detach lungs and pleura conjointly from the parietes. In this way a large saccular cavity filled with fluid or numerous multisaccular vomicæ, or other and more fragile pathological conditions, may be removed for inspection uninjured. Note the condition of the areolar or connective tissue behind the sternum, in the mediastinal space; observe whether it be infiltrated with serum, or with gelatinous, sanguinolent, sero-purulent, tubercular, or other exudation.

It will be well to tie the superior cava, or both the brachiocephalic trunks, and also the inferior cava; the œsophagus, likewise, must be ligatured as it enters the diaphragm. By cutting across the aorta, the inferior cava *below* the ligature, and the œsophagus above, the thoracic viscera may be detached, and taken out by cutting through and bringing away that portion of the diaphragm to which the base of the pericardium is attached, if it is desired to preserve this sac intact. In case of adhesion of either or both lungs to the diaphragm, this muscular expansion must be sacrificed, and a greater or less portion of it brought away in connection with the thoracic viscera.

The organs being placed on a tray, and suitably disposed for examination, the following observations may be made :—

§ 246. *Tongue.*—Note whether the caliciform and circumvallate papillæ near its base are enlarged, and more than usually prominent; whether they are filled and covered with a creamy exudation, showing epithelial scales under the microscope.

§ 247. *Epiglottis.*—Observe whether this organ be altered in form or colour; whether it be red and vascular, and round and cherry-like, instead of pale yellow, and of the natural leaf-like form; note whether the areolar tissue in its vicinity and in the glosso-epiglottidean folds be thickened or œdematous, and whether the freedom of the superior orifice of the larynx be in any way interfered with.

§ 248. *Larynx.*—Separate the lower part of the pharynx and the œsophagus from the larynx and trachea; slit down the larynx through the mesian line posteriorly, cutting through the cricoid cartilage, if ossified, with a strong-bladed scalpel; continue the incision through the membranous portion of the trachea. Note the condition of the cartilages, whether ossified or not; carefully inspect the mucous surface of the larynx. Note whether the mucous membrane be vascular and congested; whether its epithelial covering be thickened, soft, and rugous, or pale, thin, and as if abraded; note whether any parts be bare of epithelium, above, below, or on the edges of, or between, the cordæ vocales; examine carefully the sacculus laryngis for the foregoing appearances;

note whether there be any ulcerated fissures, small circumscribed or irregular ulcers, or distinct ulcerated patches, on any portion of the mucous surface of the larynx from above down, including the under or posterior surface of the epiglottis and the glosso-epiglottidean folds; observe whether there be any epithelial growth, epithelioma, on any portion of this mucous surface ; and, finally, whether there be any deposit of tubercle in yellowish or grey submucous granules, or in more enlarged masses ; examine the sacculus laryngis, and the cordæ and parts in their immediate vicinity, for these deposits. Note whether the mucous glands are loaded with exudation and prominent.

§ 249. *Trachea.*—Make a minute examination of the mucous surface of this organ to its bifurcation, following the indications given in the foregoing paragraph in connection with the larynx. Observe, further, whether there be any croupy, lymphy, plastic, and fibrinous exudation on the mucous surface ; whether it be removable in flakes, or as a caste of the whole tube.

§ 250. *Pleuræ.*—Observe and record whether the visceral and parietal pleuræ are intact and unbroken ; whether either or both pleural cavities have been in communication with the external air, by means of a perforation in the lung, or by any aperture in the parietes (as caused by fractured rib, or penetrating wound of the chest), partially or generally adherent (to be determined by passing the hand into and around the pleural cavity ; note, specially, whether adherent at the apices ; observe whether there be, or have been, air, serum (clear, or with shreds of lymph), pus, or blood, in either pleural cavity ; measure the quantity in ounces and drachms of any such effusion. Carefully examine the visceral and parietal layers including the diaphragmatic surfaces of both pleuræ for deposits of lymph, tubercle, cancer, hæmorrhagic exudation, cretaceous or osseous deposits, or hydatids; note the extent and special characters of any such extraneous elements, and observe whether they have undergone decomposition, and emit a fetid smell or not.

§ 251. A gangrenous destruction of the pleuræ will sometimes be met with; it will be recognisable by a dark, somewhat olive-greenish and ash colour, by the completely broken down and *rotten* condition of the gangrenous parts, and by the peculiar, indescribable but unmistakable odour.

§ 252. The pleuræ should be carefully followed into the interlobular fissures, and their condition in these situations noted. I have known circumscribed interlobular deposits of pus, in the interval between the lobes, to have been mistaken for pulmonic abscesses.

§ 253. *Lungs.*—Note whether the lungs collapse or protrude when the sternum is raised; whether they are lighter in colour than natural; whether they present vesicular nodules; whether the colour is altered from the natural ash-grey tint, interspersed with black spots, of the healthy organ, to a kind of reddish blue, or bloody aspect; whether they are adherent to the parietes laterally or at the apices; note whether either lung is compressed by fluid effusion, serum, pus, or blood, and bound to the spine; observe whether they crepitate between the fingers; ascertain by careful palpation whether they are solidified in part or in whole, interspersed with consolidated masses of greater or less dimensions, or infiltrated with fluid, and whether with serum, pus, or blood; note whether they be partially or generally congested, especially in posterior half, so-called "hypostatic" congestion; observe whether there be disseminated through them a number of shot-like granules (miliary tubercles).

§ 254. Examine the apices carefully (from without) for puckerings, semi-cartilaginous cicatrices, or cretaceous masses to be seen or felt through their substance; remark and reserve for especial examination any part or parts presenting more or less consolidation than natural, nodular or more diffuse deposit, indications of broken-down substance, of internal cavity, abscess, or vomica, or of other appreciable alteration which can be ascertained to exist, before sections are made into the substance of the organs. (The simple expedient of careful general palpation externally, before making sections into the lung-substance, and which, after a little practice, can be done most completely and readily, without loss of appreciable time, will enable the operator to come upon, and more fully expose and demonstrate, the special lesions presented in any given case, in a far more satisfactory manner than if sections be made indiscriminately in all directions in the pulmonic texture, as is too often carelessly done).

§ 255. *Bronchial Tubes.*—The bronchial tubes must be slit up from the bifurcation of the trachea with a fine ball-pointed scissors, and followed to the third and fourth subdivisions. Observe and note the characters of the secretion found on opening them, whether frothy, bloody, viscid, and glairy, purulent, or plastic and fibrinous; whether, if plastic, it can be drawn out by gentle traction, in continuous branching filaments, from the bronchial tubes, giving a cast of the bronchial tree; and whether any similar exudation be observable in the trachea; note whether the mucous membrane be vascular, congested, softened, thickened, abraded, or otherwise altered. Examine the bronchial secretion with the microscope, and note whether it contains epithelial cells, free nuclei, molecules, pus or blood corpuscles, and any crystalline particles.

§ 256. Observe the bronchial membrane at the bifurcation of the trachea; note whether the longitudinal and circular fibres (muscular fibres of Reisseissen) be much developed, prominent, and cord-like, or the contrary; note the state of the membrane as to congestion, vascularity, thickening, and redundancy of its epithelium, or the contrary, and whether there be any signs of abrasion, erosion, or ulceration; follow the tubes as far as possible with the fine ball-pointed, and then with the sharp-pointed scissors; observe whether they are anywhere dilated into uniform spindle-shaped expansions, saccular or ampullar dilations, or hernial protrusions of the mucous membrane through the circular fibres, constituting cavities communicating by a more or less contracted opening with the tube, and impinging on the lung substance, and liable to be confounded with phthisical or other cavities, of different pathological origin.

§ 257. Note whether the tubes are anywhere contracted in calibre, and whether this contraction be dependent on constriction of their own walls, or be the result of pressure from without by aneurismal or other tumour.

§ 258. Observe whether the tubes open at any point into or upon a cavity; note the manner of any such opening, and the kind of cavity, and the nature of its walls and of its contents.

§ 259. In following up the bronchial ramifications, observe particularly whether there be any obstruction or obliteration in any of the tubes of the second, third, and finer subdivisions, by dense viscid mucus, or fibrinous matter; note whether this obstruction be temporary and removable, or the result of firm impaction of solidified fibrinous exudation, and apparently some time in existence; note whether, as the result of such long-continued obstruction, the pulmonary tissue beyond the obstruction be collapsed, dense, free of air, and in a condition resembling or approaching to splenisation or carnification; with the blowpipe, try whether the collapsed portion of the pulmonary tissue can be reinflated with air.

§ 260. In tracing up the bronchial tree from the bifurcation of the trachea, note at the roots of the lungs the appearances of the anterior and posterior pulmonic plexuses; note also, from the outset, the appearances of the bronchial glands; observe whether they are enlarged, gorged with blood, filled with carbonaceous matter, infarcted with cheesy tubercular deposit, or degenerated into a hard cretaceous substance, also whether they present cancerous infiltration; observe whether, if much enlarged, they constrict, or surround, or exert pressure on the bronchi at any point, or upon any contiguous anatomical structures, as vessels, nerves, &c.

§ 261. At this stage of operations it will be well to resume the examination of the vascular apparatus. Removing the ligatures from the pulmonary arteries and veins, follow both carefully up with the fine ball-pointed scissors as minutely as they can be traced; note the characters of the blood contained in them, whether much in quantity, fluid, tarry, black and jelly-like, or semi-fluid, or presenting long, yellowish, glairy and gelatinous, or pretty dense and firm, cord-like, fibrinous coagula, traceable through many subdivisions of the pulmonary vessels, and capable, by gentle traction, of being drawn out in long branching filaments. Repeat the same observations on the blood seriatim, in section of other organs.

§ 262. Observe the internal surface of the vessels; note whether the lining membrane presents the natural, smooth, glistening appearance, or whether it is anywhere dull, opaque, roughened, presenting atheromatous or calcareous deposit, or fissured and cracked.

§ 263. Trace out the vessels rapidly, but with minute care, and note whether they are pervious throughout, also whether their walls are unbroken and continuous; note if they pass near or through any cavity, and whether there be rupture or erosion of their walls in its vicinity; observe if there be any point of obstruction; take the precaution to isolate and examine it with especial attention: note the character of the obstructing body, its form, length, colour, consistence; whether soft or hard, fibrinous, cartilaginous or calcareous, uniform in substance or partly puriform, movable or firmly impacted, adherent or non-adherent to the walls of the vessel; whether apparently fibrinous and of blood origin (coagulated fibrine), or calcareous, or both mixed; whether resembling a fragment of warty, valvular vegetation; and whether similar in appearance to any vegetation, or other deposit, that may exist on the valves of the heart, or elsewhere.

If any such obstruction be detected, note whether there be any condensed nodule of pulmonary substance around or beyond it; define the size of this nodule; observe whether it be impervious to air, of deep blood-red or livid tint, gorged with blood, solid and granular, or greyish-yellow, broken down, and of purulent or semi-purulent aspect.

§ 264. Place a small fragment under the microscope (D. 300 to 500), or scrape some of the semi-fluid matter, and submit it to the same powers; note whether epithelial cells, nuclei, and other elements, compound granular corpuscles, blood or pus corpuscles, oil molecules and granules, pigmentary matter, hæmatoid or other crystals, cholestearine, &c., be present, all or singly.

§ 265. If, in the preliminary process of general palpation, and in the tracing out minutely of the bronchial ramifications and those of the pulmonary arteries and veins, no special localised lesions, as vomicæ, tubercular or other deposits, nodules of collapsed tissue, cancerous, osteoid or other masses, have been discovered, and the lung-tissue can be readily compressed between the fingers, free sections may be now made with the scalpel through the pulmonary substance, from the apex to the base, and in a direction from before backwards;

note the appearances presented in the anterior and posterior, superior and inferior, parts of the section, whether there be much blood in the dependent parts; remark whether the knife meets with resistance and the lung-substance creaks under the scalpel; also whether it is elastic and crepitates between the fingers, pits on pressure, or breaks down readily, leaving an irregular granular surface; observe whether a spumous sanguinolent serum exudes in quantity (as in general and minute capillary bronchitis); note whether there be a uniform, more or less extensive, reddish, granular, liver-like consolidation of one or more lobes (*red* hepatisation of pneumonia); note whether a fragment sinks or floats in water; note the exact seat of such hepatisation, especially if confined to upper or anterior lobes; observe the outlines of the lobes as marked by the fissures, and note whether the reddish granular consolidation be (as it often is) sharply defined and limited by an interlobular fissure, the contiguous lobe presenting no such, and perhaps a quite different, pathological condition. Note whether one or more lobes present the appearance of an ash-grey, indistinctly granular consolidation, with more or less of a semi-purulent infiltration, and with or without small or larger abscess-like cavities, containing pus and half-disorganised lung-elements (*grey* hepatisation of pneumonia); observe whether abscesses have formed in any parts, define their shape and dimensions, and state what the character of their contents, and whether they have a secreting lining membrane.

§ 266. Examine under the microscope (D. 300 to 500) all softened apparently purulent deposits or collections in the lung-substance, and note whether pus elements be present; scrape off a fragment of the lining of any cavity under examination, and observe whether its walls present a distinct epithelial coat, or secreting membrane.

§ 267. Distinguish carefully the compressed, carnified, meat-like or splenified state of the lung, long exposed to the pressure of fluid effused in either of the pleural cavities, from the foregoing conditions.

§ 268. In cases not presenting the pathological states of red or grey hepatisation, note carefully the condition of the pulmonary textures, whether softened and friable, and of a dirty grumous aspect, or partially or wholly engorged; observe whether there be any partial or general infiltration of dirty, broken-down, gelatinous, or otherwise imperfect exudation; note whether the exudation takes the form of semi-transparent miliary granulations, or that of a more diffused gelatiniform, or well-marked dark-brownish exudation, implicating lobules, lobes, or one or both lungs generally; note whether minute abscesses, or collections of dirty creamy-looking matter, exist in any situation; note whether fragments of the lung-substance float in water, and take the specific gravity of one or more cubical fragments of the denser portions; note whether any portions have a sloughing or gangrenous aspect or smell.

§ 269. Examine under the microscope (D. 300 to 500) minute fragments of the lung-substance, or some of the semi-fluid matter scraped off with a scalpel; note whether epithelial cells, nuclei, and other elements, oily molecules and granules, pus corpuscles, or blood discs, be present.

§ 270. Observe whether sparse or thickly deposited grey or yellowish shot-like granulations (miliary tubercle) be disseminated through the lung-substance, or whether more consolidated deposits of yellowish or greyish cheesy matter exist in any parts; note whether such deposit be uniformly dense throughout, or softened and breaking down in the centre; observe with a lens (D. 10 to 15) whether a vascular areola can be detected around such granular or other deposits; note whether in any parts these deposits have been softened and evacuated, leaving cavities (vomicæ) in the lung-substance; note the dimensions, form and contents, of such cavities; observe the colour of their walls, also whether they are regular in outline or broken and jagged, whether they are crossed by bands of partially destroyed lung-substance or by cord-like obliterated vessels; note whether they present any lining membrane or cartilaginous envelope; also whether they communicate directly with any bronchial tube of appreciable dimensions. Secure the nearest bronchial tube, and with the blowpipe (the cavity being placed under water, if necessary) ascertain whether any communication can be shown to exist with a bronchial tube or with the pleural surface. Note the state of the minute bronchial glands.

§ 271. Examine this tubercular exudation under the microscope (D. 500 to 800); note the imperfect cell-forms, the abundance of nuclei, molecules, and granules; observe whether any pus-elements be present, also blood discs, epithelial cells, pigmentary or other granules, crystals, plates of cholestearine, &c.; note whether any broken-down lung-tissue can be detected.

§ 272. Observe whether cancerous deposit in the form of isolated encephalomatous masses, of greater or less dimensions, or general soft cancerous infiltration of the pulmonary tissues have taken place.

§ 273. Observe whether gangrene of any portion of the lungs have taken place, as the result of pressure by aneurismal or other tumours on the nutrient vessels, or caused by intense but low inflammatory processes: the condition is to be recognised by the peculiar rotten odour and the broken-down state of the lung-tissue, in which it resembles rotten tow.

§ 274. Observe whether ossification of the pulmonary texture, or distinct calcareous transformation, have taken place to any extent. (Virchow.)

§ 275. In examining the lungs of children, note whether the reddish, dense, meat-like, unexpanded, non-crepitant state of the pulmonary tissue (atelectasis pulmonum of Jörg) be anywhere discernible; also whether there be non-crepitant, circumscribed, solidified masses of lung-texture, limited by irregular pentagonal outlines on the pleural surface, and known as interlobular pneumonia; note whether cubical fragments float in water.

§ 276. Inspect the pulmonary texture carefully for portions of collapsed tissue in the vicinity of obliterated or obstructed bronchial tubes, try if such collapsed portion can be inflated by the blowpipe; note the characters of such obstructed bronchus and collapsed tissue, if now discovered for the first time, according to the indications given in § 259.

§ 277. Observe whether nodules of pulmonary apoplexy, or more diffuse patches of pulmonary hæmorrhage, exist in any portion of the lungs; define their extent and the characters of the effused blood, whether fluid, semi-fluid, or coagulated, florid or dark, altered, semi-purulent or decomposed; secure the nearest vessel—(a bronchial artery—if possible), and trace it with the probe, or the fine-pointed scissors, as close to the centre or focus of the hæmorrhagic lesion as possible; note carefully whether there be any extraneous source of such hæmorrhagic infiltration, as rupture of an aneurismal sac.

§ 278. Pericardium.—Note whether this fibro-serous sac be present, and retain its irregularly triangular outline with the base on the diaphragm; whether thickened, dense, and opaque, or thinned and semi-transparent; whether movable on the heart and vessels, or more or less adherent to them; whether closely investing them, or separated from them by interposed fluid effusions; if enlarged, define its dimensions by reference to fixed anatomical points to which it reaches as so such and such a rib, or intercostal space; pinch up a portion of the anterior wall of the sac near its diaphragmatic attachment; carefully insert the scalpel in an oblique direction, and slit the membrane in a direction from below upwards; when a sufficient space is opened, pass in the first and second fingers of the left hand for a short distance, and use them to distend and hold up the separated edges of the sac, so that no liquid effusion, if any, be allowed to escape till the contents are carefully inspected and measured.

§ 279. Note whether the contents, if any, are serous, clear, or mixed with lymph-flakes, sero-purulent, purulent, mixed with blood, or a pure hæmorrhagic exudation from the serous surface, or from ruptured heart or vessels; measure the quantity in ounces and drachms of any such effusion; observe whether the serous surface presents on its parietal or visceral layer, either or both, partially or generally, before or behind, on the ventricles, the auricles, or the great vessels, or in the *cul-de-sac* reflections, soft or firm, recent or old, thick and smooth, honeycombed, or rough, prominent and shaggy deposits of yellowish, tawny, or buff-coloured lymph (pericarditis); note whether such lymphy exudation be partially or generally tinged with blood (hæmorrhagic pericarditis) or interspersed with tubercle (tubercular pericarditis); observe whether any parts of this lymphy exudation have been worn smooth by the attrition of opposed surfaces; also whether adhesion has taken place in parts, and whether between limited or extensive surfaces, and whether by immediate union, or by elongated lymph-bands. Note especially the condition of parts at the reflection of the serous membrane on the great vessels, the auricles, and the upper parts of the ventricles; note whether any traces of finely granular lymph, or of minute lymph-patches, the remains of former exudation, are discoverable; observe whether they are still rough, or whether, though palpable to the finger passed carefully over the auricular or ventricular surface, they are smooth and covered over with a serous epithelium; examine the same under the microscope at from 300 to 500 D.—(Evidence of cured Pericarditis with lymphy exudation and without adhesion. Lyons.)

§ 280. Note whether the milky spot, the white spot of Bayle, so-called, be present; whether larger than usual or in any way remarkable; note whether gelatinous exudations, fibrous thickenings, cartilaginous bands, or calcareous plates exist in any part of the serous membrane; also whether tubercular deposit be present, isolated or associated with lymphy or other exudation; whether cancerous or other growths be presented on any part of the membrane; and finally, whether the sac presents at any point an abnormal communication with the heart's chambers, the great or secondary vessels, the lungs or pleural cavities, the stomach or other abdominal viscus, or with the external air, and whether by any such opening gases, air, pus, blood, fæcal matter, or other foreign substances, or any portions of the viscera of the thorax or abdomen, have passed into the cavity of the pericardium.

§ 281. Heart.—It is presumed that you have followed the preliminary directions respecting the placing of ligatures on both the brachio-cephalic trunks (or the superior cava) and the inferior cava, and (if the lungs have been examined before the heart) on the pulmonary artery and the pulmonary veins. When the pericardium is opened, observe the position, size, and figure of the heart generally, and of its several chambers, as also the external appearances of the great vessels. Note whether the heart be enlarged or diminished in volume, whether laterally expanded, elongated from base to apex, flattened, dilated into a globular body, or, on the other hand, diminished in volume partially or generally. Note whether the heart be firm to the touch and retain its form, or soft, flabby, and friable, or fishy and semi-putrid; observe whether the apex is formed by the left ventricle, or whether the right ventricle is enlarged in the direction of the cardiac apex and protrudes below the left; whether the apices of both unite uniformly, or are separated by a cleft or notch. Carefully note the state of the cardiac surface on both auricles and ventricles; observe whether there be lymphy, purulent, tubercular, cancerous or calcareous deposit, or yellowish fatty accumulation on any part of the heart's surface; note whether the milky spot on the right ventricle (white spot of Bayle so-called) be of unusually large dimensions, whether purpuric spots or patches, extravasated blood, pus, abscess, or gelatinous infiltration, cysts, hydatids, &c., exist in, upon, or under the serous covering, or in the muscular substance of the auricles or ventricles. Observe the conditions presented by the several parts of the cardiac apparatus in the following order:—

§ 282. *Coronary Arteries and Veins.*—Note whether these vessels in the interventricular sulci and in the auriculo-ventricular depressions are everywhere pervious, or if anywhere enlarged, contracted, obstructed, or obliterated, and whether by coagulum, fibrinous impactions, calcareous masses, or atheromatous deposit. Slit up both the coronary arteries and veins; note the character of the blood they contain, the state of the internal coats of the arteries, whether smooth, lustrous, and unbroken, or thickened with atheromatous deposit, fissured or cracked, and presenting calcareous plates; whether aneurismal or other dilatations exist; note whether the venous membrane is smooth and lustrous or rough and villous.

§ 283. *Right Auricle.*—Note the colour, shape, longitudinal transverse, and antero-posterior dimensions of this chamber. (If the patient have died slowly, and not of a blood-exhaustive disease, or of hæmorrhage in any form, and the vessels be ligatured, as before directed, this auricle (the right) will be found to be of much larger dimensions than is usually supposed. In a robust male I have found this auricle to be at least 3½ inches in vertical, 2½ inches in lateral, and 1½ inches in antero-posterior diameter. This was doubtless a temporarily enlarged condition from accumulated blood; but I have so constantly remarked the considerable dimensions of this chamber, that I am convinced that the opinion of its small size and insignificance generally entertained is erroneous; it is perhaps not possible to fix with any degree of certainty the normal standard volume of the heart's chambers; but as the result of extensive post-mortem examinations, and of the data furnished by the exploration of the cardiac phenomena *in vivo* in M. Groux,* the subject of congenital fissure of the sternum, I am disposed to regard the right auricle as both physiologically and pathologically a more important organ than is generally supposed, and for the acquisition of just notions of its dimensions, I recommend the foregoing plan of examining it post-mortem, viz., after preliminary ligature of all the vessels.) Remark the volume of the auricular appendix.

§ 284. If you give yourselves the habit of opening the heart in the following manner, you will soon arrive at great skill, dexterity, and rapidity of operation, and succeed in displaying the normal parts, and all possible pathological lesions, in the most perfect and readily intelligible manner, retaining at the same time the natural mutual relations of all its parts. I have constantly seen hearts opened, here and elsewhere, in a manner such that it was impossible for me, without infinite trouble, to recognise the right side from the left, the mitral from the tricuspid valves, and the aorta from the pulmonary artery. This difficulty is of course amazingly enhanced by the complication of extensive lesions of the chambers, muscular apparatus, vessels, or valves. The manner in which exquisitely characteristic pathological specimens are still constantly destroyed is quite deplorable. Carefully open the right auricle by an incision commencing in the mesian line of the superior cava, half an inch above its termination, and terminating in the inferior cava; make a second incision from the tip of the auricular appendix to the middle of the foregoing ; or, make a horizontal incision from the auricula (auricular appendix) to the inferior cava, and then a vertical one, from the vena cava superior to the first (Cruveilhier); but I prefer the former method. Two somewhat triangular flaps will thus be made of the anterior wall; throw one upwards, the other downwards, and a full view will be obtained of the interior of the auricle, auricular appendix, openings of the cavæ, of the right auriculo-ventricular, and of certain lesser orifices.

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* See the author's paper on M. Groux's case, Atlantis, June, 1858.

§ 285. *Blood of Right Auricle.*—Note its odour, colour, and consistence, and whether fluid, semifluid, separated into yellowish fibrinous coagulum and a fluid portion, or uniformly jelly-like, of reddish, bluish-black, or black and tarry colour; whether consistent and having body, or thin, watery, and dissolved in appearance; whether any traces of oily molecules be visible upon it, and whether it present a purulent, ichorous, or leukæmic aspect. If any coagulum be present, note whether it be firm, tawny, yellow, or pale and gelatinous, and whether it extend into the several orifices; measure, as nearly as may be, with accuracy in ounces and drachms, the quantity of blood contained in the auricle (preserve the blood of the auricle in a clean vessel, to be estimated by re-weighing finally with the whole of the blood in the heart).

§ 286. When the blood is removed note the internal surface of the cavæ, and of the auricle, whether smooth, polished and transparent, of uniform tint, and not thickened, or rough and villous; whether purulent, lymphy, or other particles adhere to the membrane, and whether deposits of pus, ecchymosis, or purpuric spots, or marks of any kind, erosions, ulcerated or sloughy patches, exist beneath it; observe the size and development of the musculi pectinati; examine the orifices of the venæ cavæ, and the coronary veins, try if a probe can be passed through the foramen ovale; note carefully the auricular aspect of the right auriculo-ventricular opening; estimate its size by inserting the graduated cone till it be fully distended, recording the figured line reached, or roughly, by passing in three or more fingers (the right auriculo-ventricular orifice of healthy dimensions admits three fingers—index, magnus, and annularis).

§ 287. *Right Ventricle.*—This chamber may be best opened by an incision carried from the apex parallel to, but a little to the right of, the interventricular depression, to the cone of the pulmonary artery, a second incision being carried along the right free margin of the ventricle to the base; the triangular flap thus formed will, when thrown back, exhibit the ventricular cavity, its contents, orifices, valves, and other appendages, in a perfectly satisfactory and intelligible manner. If it is desired to keep intact all the internal parts of the ventricle, including the larger carneæ columnæ and chordæ tendineæ, and to observe the exact condition of the tricuspid valves as nearly as possible *in situ normali*, remove a small triangular flap from the anterior wall of the ventricle, the three incisions of which shall be one quarter of an inch from the base, septum, and right free body respectively. Observe and note the thickness in lines, and the colour and consistence of the muscular fibre, the character of the lining membrane, and of the contained blood, following seriatum the indications given in § 286, as to the auricular surfaces and its contained blood. Observe the thickness, prominence, and perfect or ruptured condition of the principal carneæ columnæ and their chordæ tendineæ.

§ 288. *Tricuspid Valves.*—Note if the colour, smoothness, transparency, and completeness of the right, left, and posterior segments of the tricuspid valves be in any degree impaired; whether they are thickened, corrugated, fissured, rent at the edges, perforated or cribriform; whether granular, lymphy, warty, fibrous, or cartilaginous excrescences, nodules, or thickenings, or calcareous deposits, be presented on their edges or surfaces; note whether any portions of them be free and reversible through the orifice by detachment from the chordæ tendineæ.

§ 289. *Pulmonary Artery.*—Continue the incision along the septum made in opening the right ventricle, through the infundibuliform prolongation of this chamber into the pulmonary artery, and lay open the vessel to its bifurcation; remark whether it be anywhere constricted, dilated, perforated, or otherwise injured; note the size of the vessel, the character of the blood it contains, the colour, polish, and transparency of its lining membrane, or the opposite condition of the same; observe whether there be opacity, thickening, deposit, corrugation, rents, fissures or cribriform or otherwise imperfect states of the lining membrane or the sigmoid valves; observe whether the remains of the ductus arteriosus be remarkable. With the scissors trace up the ramifications of this vessel through the lungs as far as possible; note whether they be pervious throughout, whether they contain coagula, or whether they are constricted, dilated, or obstructed at any point; whether clots, fibrinous shreds, mucus, warty or calcareous particles, or any extraneous elements are anywhere impacted in them; note minutely the condition of the pulmonary substance in the vicinity of any such obstructed vessel. (For further particulars see § 263 on Lungs.)

§ 290. *Left Auricle.*—Note its figure and dimensions; observe its surface for discoloration, deposits, or other changes, following seriatim the indications in § 286. This chamber may be opened as follows: make a vertical incision from before backwards, between the right and left pulmonary veins, including the entire posterior wall of the auricle. (Cruveilhier.)

For the pathological characters of the lining membrane, walls, and contents of this auricle, follow seriatim the indications given in § 285.

§ 291. *Pulmonary Veins.*—Follow up these vessels through the lungs, as directed for the examination of the pulmonary artery.

§ 292. *Mitral Orifice from the Left Auricle.*—Carefully inspect this orifice from the auricular aspect; note whether it be patulous and enlarged, or constricted; take its dimensions (it naturally admits two fingers); note whether its sides are smooth and polished, or rough and presenting wart-like excrescences or calcareous spicula; whether the shape of the orifice be round, oval, lunated, crescentic, or funnel-like; whether it be large and permanently patent, or narrow and tubular (so as to admit only a quill-barrel).

§ 293. *Left Ventricle.*—On no part of the human body, in relation to pathological anatomy, has more attention been bestowed than on the cavity of the heart now to be examined; yet in regard to no other organ, or part of an organ, perhaps, is a less accurate or more unsatisfactory mode of examination practised by many persons.

*Methods of Opening the Left Ventricle and Aorta.*—I have found the following plan simple, expeditious, and most satisfactory in displaying in the fullest and most readily intelligible manner, the interior of this chamber, its contents, its orifices and valves, and those of the aorta; the identity, mutual relation, and relative position of all parts, normal and pathological, being most perfectly maintained, while no dissection more completely fits a specimen for exhibition of details in a preserving jar or glass-vessel.

§ 294. In the first instance, and before making any incision into the left ventricle or the aorta, cut across the pulmonary artery at a distance of about a quarter of an inch from its bifurcation; gently lifting the cardiac portion of this vessel with the forceps, free it and the infundibuliform expansion of the right ventricle from which it arises, from the aorta, and throw them back towards the right side; now make, very carefully and cautiously, a horizontal section with the scalpel, through the left ventricle, at the junction of the inferior and middle third; this section should be carried in as far as the septum on the thick left border of the heart, and about half way only to the posterior aspect; pass the left index finger into the ventricle through the section, let it glide upwards along the septum, and explore the aortic orifice; advance it very gently till it passes into the aortic orifice, unless the commencement of that opening be thus found to be constricted, or be felt to be covered with delicate vegetations or calcareous spicula, in determining which no force whatever is to be used, and the tip of the finger is to remain at the mouth of the vessel barely in contact with the valves or the vegetations upon them; now make an incision with the scalpel along the edge of the septum towards the aorta, carry it through the anterior wall of this vessel, guiding the blade by the finger within to the interval between the anterior and right, or the anterior and left sigmoid valves. The flap thus formed, when raised, exposes to view with full effect, the cavity of the ventricle, its contents, walls, orifices, valves, and such morbid conditions as may be present.

§ 295. Another excellent method of opening this ventricle is as follows:—Make an incision along the septum from the apex to the origin of the aorta, and another along the left thick border of the ventricle to the base, throw back the triangular flap thus formed, and a good view will be obtained of the interior of the cavity, its contents, its walls, its orifices. and their valves. The first incision may be prolonged through the aortic orifice and the anterior wall of that vessel, or the aorta may be opened from above, the aortic orifice being preserved intact. Each of these proceedings is proper for particular states of the sigmoid valves and the aortic orifice, as will be found more specifically detailed further on.

§ 296. When the left ventricle is fully opened, note its dimensions longitudinally and transversely in inches and lines; observe its contents, the quantity of blood in ounces and drachms, and its colour and consistence; observe whether it be fluid, semi-fluid, coagulated, separated into a yellowish fibrinous or gelatinous portion, and a reddish black-currant-jelly-like mass; whether, if fluid, it be thick and have body, or be thin, watery, as if dissolved; note whether oily particles or a purulent, ichorous, or leukæmic appearance be presented in it. If a fibrinous coagulum exist, note whether it be prolonged into the auricle or the aorta; likewise observe whether it be moulded on the mitral or semilunar valves. Occasionally little spur or barb-like projections will be found on the coagulum, just beyond the orifice of the aorta, and which have been formed by the fibrine being moulded on the sigmoid valves, in the interval between their aortic surfaces and the wall of the vessel.

§ 297. Observe whether the carneæ columnæ and chordæ tendineæ are everywhere perfect and unbroken; note the character of the lining membrane, whether it presents thickenings, opacity, want of smoothness and polish, bright redness and villosity, purpuric or melanic spots, blood extravasations or ecchymoses, gelatinous, lymphy, purulent, tubercular, cancerous, pigmentary, or other infiltration or deposit; whether it be abraded, eroded, or ulcerated at any point, or present purulent or other cysts, or hydatids. Examine for abnormal communication with the pericardium, the right ventricle, or other part.

§ 298. *Mitral Valves from Cavity of Ventricle.*—Carefully observe the size, colour, thickness, transparency or opacity, rent, fissured, perforated, cribriform or contracted, and corrugated state of the right or anterior, and of the left or posterior flap of the mitral valve; note whether lymphy exudation, cartilaginous nodules, warty excrescences or vegetations, calcareous deposits, or rough and sharp osseous-like spicula be presented on either fold of the valve, and whether on the ventricular or auricular surfaces, or both. Note whether the pathological conditions present, if any, diminish and obstruct the orifice, presenting or opposing an obstacle to the ingress of the blood from the auricle to the ventricle, or whether, on the other hand, the valves are so impaired as to be unable to close the mitral orifice, and thus allow of regurgitation of blood from the ventricle to the auricle when the former chamber contracts; note the shape and dimensions of the orifice from the ventricular aspect, whether circular, oval, lunated, or crescentic, funnel-shaped or patulous.

§ 299. *Aortic Orifice from Ventricle.*—Observe whether it is dilated or constricted, smooth or rough, free or obstructed; take its dimensions; note whether the valves are capable of closing the orifice or leave it permanently patent, admitting regurgitation from the aorta into the ventricle; or whether they offer an obstruction to the egress of the blood from the ventricle into the aorta; observe whether water poured into the aorta flows through the orifice into the ventricle or percolates through cribriform holes, rents, or fissures; or whether, on the other hand, it causes the sigmoid valves to fall down and meet together, close the orifice, and prevent the regurgitation of fluid from the aorta into the ventricle, showing their competency as valves to close the orifice, no matter what other pathological conditions affect them. These valves may be found enlarged, thickened, covered with warty or calcareous excrescences, and yet adequate to close the orifice perfectly, though when thrown up against the walls of the aorta at the ventricular systole, the warty excrescences upon them offer such an obstacle to the egress of the blood as to throw it into irregular vibrations (and thus cause murmur audible with the first sound of the heart).

§ 300. After performing the hydrostatic experiment above-mentioned, it is my opinion that, for almost all purposes, it is better to slit open the aorta, continuing through this vessel the incision made along the edge of the septum, when opening the left ventricle, and guiding the knife by the indications of the tip of the left index, placed at the mouth of the orifice, so as not to cut across any of the three sigmoid valves, but to make the section of the vessel in a line between the most anterior and the right one, or between it and the left one; a full view of the valves, their remains or excrescences on the interior of the orifice, and of the walls and lining membrane of the aorta, is thus only fully secured.

§ 301. Note the size of the valves (individually), and whether they are enlarged and expanded* or constricted, corrugated, thickened, opaque, reddish, vascular, rent, fissured, or cribriform, covered with wart-like excrescences, cartilaginous, granular, atheromatous deposit, or calcareous spicula. Note the state of the corpora aurantii, whether thickened, cartilaginous, or converted into calcareous masses.

§ 302. *Aorta.*—Note from without its position and size, whether dilated at the sinuses of Valsalva, generally, or at the sinus of Morgagni; take its dimensions. Having slit up the vessel to the transverse portion of the arch at least, note the thickness of its coats (in lines), the character of its contents (see § 285, for Blood); the colour, smoothness, polish, transparency or opacity, thickening, roughness, redness or paleness, of its lining membrane; gently sponge off any blood or blood-stains from the internal coat; note whether the red colour, if any, seems due to blood-imbibition, or be the result of hyperæmic action in the coats themselves; observe carefully the state of the ampullæ or sinuses of Valsalva (above the sigmoid valves), whether enlarged or dilated into aneurismal sacs; note whether the internal coat presents yellowish spots, diffuse patches of atheromatous deposit, calcareous spicula, or plates in, on, under, or protruding through it; note the extent of the vessel occupied by any such plates, and whether it be distended, or occupied with true or false aneurismal dilatations; note whether blood has at any part insinuated itself between the internal and middle coats, constituting dissecting aneurism; observe whether an abnormal opening exist in any part of the vessel, and with what part or parts a communication is thus established.

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* I have called attention to what I conceive to be a supplementary enlargement or expanded condition of the sigmoid valves of the aorta, without other change in their structure, whereby they are enabled to completely close the aortic orifice when this vessel is dilated to considerably beyond its natural dimensions. See Proceedings of Pathological Society of Dublin, Session 1857–58.

§ 303. Cavity of Abdomen.—This cavity having been opened by the vertical incision from the neck to the os pubis, note the appearances presented before the relative position of parts is disturbed; observe whether the solid and hollow viscera occupy their normal situations; whether the liver descends low, the spleen comes into view, and if the stomach and intestines are much distended with flatus, and protrude; note likewise the colour of the several parts presented; observe whether there be fluid effused in the cavity, and whether it be clear, serous, straw-coloured, bloody, mixed with lymphy flakes, or purulent, or sero-purulent; determine its specific gravity, and its quantity by measurement in pints ounces, and drachms; note whether it be coagulable by heat, or nitric acid, or both, and what histological elements, if any, it presents under the microscope (D. 300—500); whether it contains compound granular cells, nuclei, molecules, or blood or pus corpuscles; observe whether gases, fæcal, or other foreign matter, have anywhere escaped into the cavity.

§ 304. *Peritoneum.*—Note whether the parietal and visceral serous surfaces be uniformly smooth and polished, or rough, opaque, villous, vascular, bright pink, bluish, or ash-coloured, covered with purulent, gelatinous, or more dense lymphy, tubercular, granular, or cheesy, hydatid, cancerous (colloid or encephalomatous), pigmentary, or other deposit, or infiltrated with any of same; note specially whether yellowish glutinous lymph be anywhere effused, causing the viscera to adhere to particular parts of the parietes, or to each other; note carefully whether there be any breach of surface in the parietal or the visceral layer.

§ 305. *Stomach and Intestines.—External Appearances.*—Observe whether these viscera be distended or contracted; note their dimensions at various parts, as in jejunum, ileum, and colon; observe if they are pale yellowish in aspect (normal), or vascular, congested, reddish, pink, or bluish-coloured, and whether largely so through extensive portions of the intestinal tract, or only in isolated patches.

§ 306. Observe whether intussusception has taken place at any point; also whether hernial protrusion, penetrating wound from without, ulcerating erosion from within, or rupture in any form, be discoverable in any part of the intestinal tract.

§ 307. *Mesentery, Omentum, and Mesenteric Glands.*—Note the condition of the great vessels of the mesentery. Observe whether the great omentum be spread over the intestines, or corrugated; whether the mesentery be elongated or contracted; whether these parts be loaded with fat, thickened, vascular, or congested, the seat of tubercular, cancerous, or other deposits; note the condition of the mesenteric glands, whether enlarged, bluish red, and congested, and gorged with blood, filled with semi-fluid, creamy, semi-purulent, gelatinous, cheesy, tubercular, cretaceous, cancerous, typhoid, melanic, pigmentary, or other deposit; whether converted, in whole or in part, into cretaceous nodules; note the dimensions of the largest in lines, take their specific gravity (§ 342).

§ 308. Observe whether tumours of any kind be present in the cavity of the abdomen, along the spine, on the aorta, in the mesentery, at the pylorus, in the uterus, ovaries, or solid viscera, and reserve them for special examination.

§ 309. For the careful examination of the mucous surface of the stomach and intestines, it will be necessary to remove these organs from the body. To make a complete post-mortem examination, it will be absolutely essential to examine the mucous surface of the whole intestinal tract, from the mouth to the anus. In such cases the tongue, larynx, and trachea may be allowed to remain in connexion with the pharynx and œsophagus; detach this latter from its areolar tissue connexion to the spine in the neck and thorax; remove with it the immediate muscular envelope of the diaphragm which encloses it; detach the stomach from its connexion with the gastro-hepatic and gastro-splenic omentum; disengage the duodenum, and, using gentle traction on the intestines with one hand, divide the attachment of the mesentery within a quarter to half an inch of their concave border. By following this expedient, the whole intestinal tract, to within a short distance of the anus, may be rapidly, and without injury, removed from the body. I would recommend the adoption of this plan when it is desired to pack and seal up the intestines and other parts, with a view of sending them to a chemist for analysis of their contents. For ordinary purposes, the stomach (with one or two inches of the œsophagus), or the œsophageal fragment, stomach, and duodenum, may be removed together, a ligature being first placed on the lower end of the œsophagus and on the termination of the duodenum. It would be well to examine carefully the jejunum and ileum at all times; but however great expedition be requisite, do not neglect to open and inspect the lower eighteen inches or two feet of the ileum, the cæcum, and a small portion (five to six inches) of the colon. This may be rapidly accomplished by taking up the ileum at the required distance from the cæcum, cutting it across between two ligatures, detaching the mesentery, and following the intestine down to the cæcum, which, with a portion of the colon severed between two ligatures, may be removed with equal celerity. This operation, which gives such important negative or positive results in almost all cases, may be performed by a practised and skilful hand in less time than it takes to describe it, including opening the intestine (with a bowel scissors) and washing it of fæces, &c.

§ 310. *Stomach.*—Observe whether the stomach presents the hour-glass constriction, whether it be full and distended, or flaccid and collapsed, or contracted; whether the vessels along its concave and convex borders be engorged, its walls bluish and congested, rose-coloured and hyperæmic, or marked with purpuric or other spots; observe whether deposits of any kind, gelatinous, tubercular, or cancerous, be present in the glandulæ on either border, or in the substance of the walls of the organ, or at the cardiac or the pyloric termination.

§ 311. Commence an incision to open the cavity of the stomach in the lower part of the œsophagus, and continue it along the concave border to the pylorus; if no tumour exist in this latter situation, the incision may be continued into the duodenum, so as to expose the cavity of that intestine.

§ 312. On opening the stomach, note the thickness of its walls in lines; observe the colour, odour, consistence, fluidity, or semi-solid state of its contents, ascertain the quantity of matter present, its reaction with blue or reddened litmus paper, and its specific gravity; observe whether the gastric contents be yellowish, greenish, dark blood-red, lees of wine colour, blackish (black vomit), or pure blood (gastrorrhagia), in appearance. Carefully remove the contents of the stomach, and place them in a covered glass jar or other suitable vessel for further examination if necessary. In this operation, scrupulously avoid wiping, sponging, or scraping with the scalpel the gastric surface until carefully examined.

§ 313. Note the general internal aspect of the cavity of the stomach as follows: whether the walls are contracted, and thrown into rugæ over the surface generally, or in parts only. Observe their colour, whether pale yellowish, olive-greenish, flesh-coloured, pink, uniformly or in patches, bluish slate-coloured and congested, covered with arborescent veins in the great fundus, on the convex border, or generally; note whether general ramiform vascularity, stellate congestion in limited patches or large surfaces, be present; also, whether circumscribed patches of hyperæmic engorgement are anywhere discernible, and whether purpuric spots exist in any situation. Observe whether the mucous surface be thick, mamillated, decomposed, softened, gelatinous, readily removable on slight pressure with the finger, or firm and adherent; remark (in rare cases) if the mucous membrane be anywhere or generally thinned, atrophied, pale, exsanguineous, and reduced to a parchment-like state;* take its specific gravity.

§ 314. Note whether the tubular or lenticular glands of the stomach, especially the latter (so-called glands of Sprott

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* See Report (Blue Book) to Minister at War on the Pathology of the Diseases of the Army in the East (Crimean Campaign), also Dr. Aitken's Handbook.

Boyd), be infarcted with epithelium, molecular oil or fatty matter, or with gelatinous or tubercular exudation, or atrophied and obliterated.

§ 315. Observe whether the gastric membrane be detached, dissolved, abraded, or eroded in points or patches; carefully distinguish between the appearances due to the solvent action of the gastric acids on the coats of the stomach (post-mortem digestion), and the results of inflammatory or ulcerative action during life; in the former case the detachment of the epithelium is ill-defined, irregular, and superficial, though over a large surface; often in the depressed intervals of folds or rugæ, when such exist, the aspect of the parts adjacent is dirty, olive-greenish, or blackish and decomposed-looking, and there is an absence of any defined vascular halo or areola, though general arborescent or other vascularity may be present in the neighbourhood.

§ 316. Note whether circumscribed patches of ulceration be anywhere present; remark their exact site, if near cardia, pylorus, or on great curvature; whether they are oval or circular, shallow or depressed, presenting thick, reddish, hard, prominent, notched, or excavated edges; examine their interior and floor, note whether coated with pus or ichorous fluid, whether showing granulations or false membranes (tendency to heal), and what tissues, if recognisable, they have eaten through or down to, as submucous tissue, muscular tissue, peritoneal coat; note carefully the state of the gastric vessels in the immediate vicinity, and whether any of them appear to have suffered from the erosive process; if gastric hæmorrhage have taken place, examine for its possible site and source (seldom easily determined). Observe with minute care whether perforation have taken place at any point.

§ 317. Note whether colloid (gelatiniform), encephalomatous, or scirrhous cancer be anywhere present, as at the cardiac end, or the greater or lesser curvature, or at the pylorus, and whether in isolated masses or occupying any large extent of the gastric surface; note the dimensions and connexions of any such deposit.

§ 318. Remark whether isolated non-cancerous scirrhus of the pylorus be present, characterised by the absence of cancerous deposit in other parts of the stomach and in other organs; by the predominance of fibrous stroma, and the presence of longitudinal and circular bands of thickened and hypertrophied muscular tissue and other normal elements of the coats of the stomach, in the substance of the tumour on section; by the absence of lactescent juice, and by the microscopic characters.

§ 319. *Duodenum, Jejunum, and Ileum.*—Note the dimensions of these intestines, and their colour from without, whether pale, slate-blue, congested, or pink; open them by incision with the bowel scissors, along the mesian line on their concave aspect and corresponding to the attachment of the mesentery and the entrance of the vessels.

§ 320. Note the thickness of their walls and the aspect of their contents, usually yolk of egg or gamboge-colour in the upper third, fæcal matter in the lower two thirds; gently wash with a stream of water the surface of this part of the intestines; remark if its mucous surface be hyperæmic or congested, bluish or pink-coloured, uniformly or in patches; also whether purpuric spots or patches be observable upon it.

§ 321. Note whether the vascularity present has manifest relation to the minute glandular apparatus; whether arborescent vascular rings surround independent solitary follicles; whether large vascular patches embrace a group of Peyer's patches; whether oblong patches of vascularity exist, three to four or more inches in length, and half to one inch in breadth, and situated opposite to the entrance of the vessels from the mesentery; whether in any parts the vascularity be limited to the edges of the valvulæ conniventes; also whether an extremely clean state of the surface, with general bright pink coloration and iridescent minute hyperæmic vascularity, be observable (as in cholera cases).

§ 322. *State of Mucous Surface.—Intestinal Glandular Apparatus.* Commence the examination of this delicate but important apparatus with the duodenal glands of Brunner; observe those in the first horizontal part, whether they are readily discernible, full, and prominent above the surface, impacted with epithelial and molecular elements, or shrunken, and with difficulty found; note whether these, or the Lieberkühn tubes (improperly termed follicles), in the horizontal or vertical parts of this organ, are anywhere invested with inflammatory areolæ; whether ulceration has attacked the Brunner glandulæ at any part, and whether perforation has taken place. (Special attention is required in examining the duodenum in the case of death resulting from *burns*.)

§ 323. Follow up the solitary follicles through the jejunum and ileum; note whether they are tumid and infarcted with white, creamy, or dirty and discoloured deposit, and prominent upon the surface; note whether they present the remarkable contrast of numerous white granular bodies scattered thickly on a pink-coloured or reddish field (*Sago-Grain State of Solitary Follicles in Cholera*, Lyons); observe whether they are everywhere full and tumid, or have burst and evacuated their contents, presenting black pinhole orifices visible at the several points of rupture.

§ 324. The solitary follicles and Lieberkühn tubes may be likewise traced, under corresponding conditions, into the large intestine. They are but rarely prominent upon the surface in the colon; they are always to be recognised, however, on careful exploration. Note certain black points scattered throught the mucous surface of the colon; they will be found to be the orifices of ruptured follicles, and lead to small empty cavities. In the vicinity of these black spots will be observed rounded somewhat globular bodies, from the size of a pin's head to that of a small pea, solitary follicles not yet burst, infarcted with epithelial and molecular matter. Note (occasionally) elevated pea-like bodies in colon, tumid, pustulelike, solitary follicles, containing broken down, softened, and sometimes purulent matter. When such little tumid follicles burst, they leave circular pits, a line to two lines in depth and diameter, often with a surrounding vascular areola, and having much the appearance of evacuated pustules. When thickly set on the intestine, they constitute a true follicular colitis (*Pustular Dysentery*, Lyons). Make a minute inspection of the solitary follicles, from the lower part of the jejunum, through the whole tract of the ileum, to the ileo-cæcal valve, in all fever cases, and in cases of so-called chronic, intractable diarrhœa, also in cases of phthisis; note whether they are prominent above the surface so as to reach the size of shot-grains, swan-drops, peas or beans, respectively, or even still larger; observe their form, whether rounded or acuminated; their colour, whether dark, dirty, brownish-red, or yellowish; remark their consistence, whether hard and firm, or soft, easily broken up, and giving exit to a broken-down, semi-fluid, creamy, or dirty-whitish, or brownish matter; note whether any of them have been already evacuated, leaving excavated pits, with or without circumvallate, raised, thickened, jagged, or undermined edges; note whether these appearances increase in frequency from above downwards. Carefully note the depth of the ulcerated follicles, and the tissues eroded by them; observe whether, in any instance, perforation has taken place by the approach of one of these ulcerated points to the peritoneal surface; and note whether sloughs are anywhere presented; finally, whether a process of granulation and healing is observable at any point.

§ 325. *Peyer's Patches: the Aggregated Follicles.*—Carefully examine the whole of the ileum, especially in its lower half, and the eight to twelve inches of its tract above the ileo-colic valve, to determine the state of the patches of Peyer. Note whether the whole patch and the individual glandulæ are full, prominent, vascular, thickened, elevated, infarcted with deposit, or, on the contrary, barely recognisable on the general mucous surface, the individual glandulæ being shrivelled up, and marked by black dots, the whole patch presenting a shrunken and somewhat reticulated appearance. Observe the character of the deposit in the follicles, if any; whether it be dirty brownish, yellowish, creamy-whitish, or cheesy, semi-solid or fluid, firm and consistent, or readily breaking up and exuding on slight pressure: further note whether parts or the whole of the patches are sensibly elevated above the surface by such deposit to the extent of one, three, or more lines; whether these elevated masses are entire or excavated, and converted partially or wholly into pits or fossæ, with more or less elevated, thickened, jagged, or undermined edges. Note the extent of such excavations, tissues eroded by them, and that which constitutes their base; whether they have approached to, or anywhere perforated the peritoneum; and lastly, whether there be ash-coloured sloughs or patches destroyed by gangrenous action anywhere discernible. Note, on the other hand, whether there be any process of reparation by granulation, formation of false membrance, &c. (Typhoid Fever, Follicular Enteritis, Phthisis, &c.) Follow up specially the last three patches in the vicinity of the ileo-colic valves (sometimes on its iliac surface); in cases of tubercular deposit, note the extent of the cheesy infiltration.

§ 326. In these and all other affections of the solitary follicles and of Peyer's patches, note the state of the mesenteric glands, and, if practicable, of the lacteal absorbents.

Observe and record the microscopic character of the typhoid deposit, or infiltrations, they present.

§ 327. *Inflammatory States of the Mucous Membrane of the Intestines.*—Note whether serous, pituitous, gelatinous, or lymphy exudation be found on the mucous surface of the jejunum or ileum; if true lymphy exudation, entero-diphtherite, be present, note its extent, thickness, red, blood-red or reddish-brown, or tawny colour, firmness, softness, friability, or capacity for removal in large flakes. Scrape off some half inch of it here and there, and note the condition of the mucous membrane beneath, whether highly injected, villous, and rough; and note if traces of new vessels can be discerned passing from the mucous surface into the false membrane.

§ 328. Note whether lymphy exudation be formed in the colon; remark its seat, extent, thickness in lines, colour, whether reddish, blood-red, dark-brown, dark olive-green, black, or black-currant-jelly-like; observe its consistence, whether firm and removable in flakes, or soft, jelly-like, and partially mixed with blackened blood; if the colon be contracted, corrugated, as it constantly is, observe whether on making traction on the intestines, the false appearance of deep transverse or longitudinal fissures (excavations constantly mistaken for "sloughs" of the intestine) be presented. Scrape off the lymphy exudation here and there, and note the state of the mucous membrane beneath, whether thickened, vascular, and villous, and whether traces of new vessels can be detected passing into the false membrane. (Dysentery, True Colitis, or Diphtheritic Colitis.)

§ 329. Observe whether gelatinons exudation, infiltration, emphysema, œdema, or chronic fibrous thickening, with constriction of any part of the calibre of the intestine, be present. (Scirrho-contracted Rectum, &c.)

§ 330. Observe whether cancerous deposit have invaded the intestines, whether perforation have taken place at any point, &c. Observe whether intestinal concretions of any be present.

§ 331. *Liver.*—Observe this organ *in situ* in the first instance; note whether it be sensibly enlarged or diminished in volume, extending through the left hypochondriac, umbilical, and right lumbar regions, or so contracted as to be nearly hidden under the right hypochondriac region (as when much contracted in cirrhosis). Note whether the capsule of Glisson be firm, smooth, and transparent, or thick, fibrous, opaque, and contracted. Observe whether the organ has contracted any unusual adhesions; remark its colour, whether of the ordinary reddish brown, "liver" colour, livid and congested in appearance, or red, vascular, and generally hyperæmic; whether the colour be uniform throughout or disseminated in patches; note whether it is yellowish, or fawn-yellow, or chocolate-coloured, uniformly or in patches, studded with minute points of alternate fawn-yellow and reddish brown, spots or patches, large or small, of minute, fine, stellar vascularity, or irregularly shaped pentagonal vascular outlines. Remark whether its under surface be wholly or partially tinged with bile, or whether this coloration be absent. Observe its consistence, whether it be natural, somewhat dry and firm, large, soft, and flabby, or hard, dense, and resisting, lardaceous or waxy, or soft, and greasy to the touch (in Yellow Fever and Phthisis). Note whether its surface be smooth and uniform, or nodulated, irregular, presenting numerous hobnail-like elevations, as in cirrhosis, bossy, round, or irregular masses, whitish, cream-coloured, or yellowish, with vascular points or streaks, and with or without a central softened and somewhat depressed part (encephalomatous masses of cancer, so-called Farre's tubercle), also whether generally disseminated cancer exist in the organ. Observe whether tubercular or melanotic deposit in smaller or larger masses, aggregated or disseminated, hard or softened, be present in its substance or on the surface; note whether gelatinous hydatid masses, acephalocysts, be observable.

§ 332. Carefully palpate the organ, and note whether any deep sense of fluctuation be distinguishable, also whether there be a tendency to point at any particular part of the surface (hepatic abscess, or the secondary purulent deposits in the liver in connexion with dysentery, especially the Indian variety, in Phlebitis, whether the result of wound, or purulent absorption). Note the extent of any such abscess, the character of its contents, whether purulent, grumous and flaky, or mixed with blood; remark the walls of the cavity, whether lined by a distinct secreting membrane, exhibiting epithelial scales under the microscope or not. After removing the organ, weigh it (natural weight 50 ounces), and take its specific gravity (natural specific gravity, 10 of Beaumé); note its resistance on section, whether the capsule of Glisson be thickened and fibrous, whether much blood exudes, and whether the scalpel have a wet, or greasy, or oily appearance; define the extent of any deposit or abscess. Note whether there be congestion of the vena portæ system, of the hepatic veins, or of the branches of the ductus choledochus; observe whether gall-stones be deposited in any portion of the organ, or collected in the gall-bladder. Note whether this organ (the gall-bladder) be enlarged, thickened, filled with dark or olive-greenish bile, or contain blood mixed with bile.

§ 333. Remark whether any gangrenous destruction of the organ be observable, or whether it be generally broken down, disintegrated and putrid in structure, emphysematous, and its tissues manifestly advanced in decomposition. Observe whether this condition be isolated in this organ, or associated with more or less advanced general decomposition in other viscera and in the body generally. (*Cases of Constitutional Gangrene*, Lyons.)

§ 334. *Spleen.*—Observe the position, extent, connexions, colour and consistence of the organ, whether it be hyperæmic or anæmic; take its weight (normal weight, 2 to 4 ounces), its specific gravity. Note whether it be soft, friable, or pultaceous, or more consistent and firm than usual; remark whether the capsule be thickened, fibrous, and generally hypertrophous. Note whether fibrinous or purulent deposits, or typhous, broken-down, dirty, creamy exudations be present in the substance of the organ; also whether it contain cysts, or lardaceous, tuberculous, cancerous, melanic or other deposits. Observe whether this organ is in direct or inverse ratio to the size of the liver, i.e. if large, is the liver large or the contrary?

§ 335. *Pancreas.*—Observe whether this organ be enlarged or diminished in size, hard, dense, and of scirrhous aspect, or soft and fatty; also whether there be any infiltration of the tissue with purulent or sero-purulent fluid; whether its duct be blocked up by calculus. In scirrhus pylori, note whether there be any scirrhous state of the pancreas.

§ 336. *Supra-renal Capsules.*—Note whether these organs are hypertrophied, whether they present, on section, the normal subdivision into cortical and medullary portions (the former exhibiting a very regular arrangement of cells in rows): note whether hæmorrhage has taken place into either organ; whether purulent infiltration, or an indurated state, is presented; also whether fibrous, tubercular, cancerous, or other deposit have taken place. (Inquire, if any diseased state of the supra-renal capsules be detected, whether symptoms of Addison's disease, bronzed, or otherwise discoloured skin, and a peculiar cachectic state, with wasting and loss of strength, have been presented during life.)

§ 337. *Kidneys.*—Observe whether both organs are present, whether the two are united so as to form the horseshoe kidney, whether either of them be free and movable. Note whether they are, either or both, enlarged or diminished in volume. Take the weight of each (normal weight, 3 to 4 ounces) and (subsequently) the specific gravity. Observe whether the capsule be smooth, readily peeled off, or thickened, fibrous, and adherent; whether the organs are congested, generally vascular on the surface, or presenting numerous points of minute stellate or arborescent venous injection. Note whether the organ be large, soft, flabby, gorged with blood, and of a more or less deep livid tint; whether it be large, flabby, soft, yellowish or fawn-yellow, and of either a waxy or a greasy appearance; or, on the other hand, small, hard, yellowish, and more or less granular or tuberculated on the surface. Remark whether cysts or abscesses, large or small, be noticeable on the surface; whether tubercular, cancerous, or other deposit be present; also whether there be noticeable any dilatation, saccular state, or other abnormal condition of the pelvis and ureters. With a large knife make a section through the organ in one bold sweep from the convex to the concave border; observe whether the cortical and medullary portions preserve their natural relative proportions, or whether either or both are diminished or contracted; whether either or both are congested, dripping blood on section, or presenting small blood extravasations here and there, minute reddish spots, congested Malpighian tufts, or reddish vascular streaks in the medullary part; whether, on the contrary, the surface presented on section is pale and exsanguineous, granular, hard and dry, waxy or lardaceous, or soft, flabby, and greasy to the feel, of a fawn or yellowish colour.

§ 338. Observe whether the changes present, if any, predominate in the cortical part, or are chiefly remarkable in the medullary cones. Note whether deposits of apoplectic blood-clots, pus, softened fibrous exudation. tubercle, cancer, typhoid deposit, or other product, also cysts, impaction of calculi, be observable. Examine the calyces, pelvis, and ureters: note whether free or obstructed by calculous impaction, dilated or contracted; whether their contents are bloody, purulent, or serous, mixed with pus, cancerous, tubercular, or other exudation; whether the lining membrane be smooth and glistening, natural, or rough, villous, vascular, thickened and fibrous, or fine, thin, and expanded.

§ 339. Make a section with Valentin's double knife through the renal substance from the convex border through the cortical portion, and in a direction parallel to the long axis of the cones; place it on a glass slide, and examine it, first with a low power, D. 10 to 15. Remark the condition of the tubules, vessels, and tufts; whether any or many of the vessels or tufts are gorged, ruptured, or obliterated; whether any points or lines of blood extravasation are visible; whether minute cysts, purulent infiltration, tubercular, cancerous, or other deposits, be noticeable.

§ 340. Examine the same section compressed by a lamina of thin glass under D. 300 to 500: note the condition of the convoluted and straight tubules, whether they are thickly crammed with epithelium, desquamated or shed in excess from the renal membrane; whether waxy, fibrinous, bloody, or other casts fill the tubules, or, on the contrary, whether the tubules are bare and denuded of epithelium; whether they are filled with granular oily particles, more or less soluble in ether. Observe whether the individual cells are filled with fatty or oily granular matter. Search for the Malpighian tufts, and note whether they are gorged, ruptured, or obliterated, filled with granular, oily or fatty matter, in more or less large microscopic drops or globules. Observe whether crystals of any kind are present, as those of uric acid, oxalate of lime, &c. In the atrophied and degenerated kidney observe the wasted and imperfectly developed elements, the tubules with incomplete epithelial lining, and the shrunken parenchymatous tissues. Note if microscopic cysts be anywhere visible.

§ 341. The purulent, tubercular, and cancerous deposits are to be recognised, as elsewhere, by the special characters of their histological elements; pus by the presence of pus corpuscles, showing the peculiar treble nucleus on the addition of acetic acid; tubercle by the presence of numerous minute nuclei, imperfect cell forms, abundance of granular matter, and of cholestearin plates; cancer by its lactescent juice and the abundance and large size of its cell elements, with the flattened walls, large nuclei and single or double nucleoli. Calculi may perhaps most readily be distinguished by the microscopic characters of small particles of them,

§ 342. *Specific Gravity.*—The specific gravity of fluids is most readily taken by immersion of the gravimeter or urinometer, and direct reading of the figure at which the instrument floats. The specific gravity of solids may be taken by immersing small cubical fragments of them in strong solutions of Epsom salts; common salt will answer readily for such purposes when no very great amount of accuracy is sought for. A number of solutions may be kept of various known densities in moderately tall glass jars; with an areometer or gravimeter immersed, note the specific gravity of the solution in which the fragment of tissue or other animal substance just oscillates between sinking and floating. If only one solution be used, it may be of great strength; the gravimeter being kept immersed, plunge in the substance to be examined; if it floats buoyantly, add water carefully till it just oscillates; when about to sink, read off the number on the areometer or gravimeter, which is the specific gravity required (approximately). If the body sink, carefully add more salt till it just floats, and read the specific gravity as before. O of the areometer is about the specific gravity of distilled water.

§ 343. The specific gravity may also be taken by weighing the substance carefully in air and in water, the difference will be the specific gravity required : this, though a delicate and accurate procedure, is a slow and tedious one, and the former will answer better for constant use in the post-mortem room. Very valuable information is to be gained, in a large number of instances, by taking the specific gravity of organs; and I am satisfied that, when more generally employed, it will prove to be a very useful adjunct to our means of discriminating between diseased states bearing general resemblance in external physical characters.

# APPENDIX.

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## DIRECTIONS FOR WRITING PRESCRIPTIONS.

A Prescription for a formula directing the compounding of medicines is always headed at the top left-hand corner with the abbreviation ℞, for the Latin word "Recipe" (2d person singular, imperative mood, of the verb Recipio, *I receive or take*), which signifies "Take" or "Take of;" and terminated at the bottom right-hand corner with the abbreviation M, for Misce (2d person singular, imperative mood, of the verb Misceo, *I mix*), which signifies "Mix."

The Prescriber, in fact, directs the apothecary or compounder as follows, when the Latin is turned into English:—"Take of such and such medicines such and such quantities; mix them." The imperative mood of the verb *to take* is, consequently, that which must be employed; the Latin name of the medicine or medicines required must be put in the genitive case, governed by or depending on the Latin word for the quantity ordered, which is put in the accusative case as being governed by the verb *take*. A prescription written out in full in Latin will, therefore, run thus:—

℞
(Recipe)
Decocti Cinchonæ uncias septem,
Tincturæ ejusdem Compositæ unciam unam.
M
(Misce).

Die Veneris Junii Undecimo.
Friday the 11th of June.

Sumat æger cochleare amplum ter in die.
Let the patient take a large table-spoonful three times in the day.

The following symbols are used to represent certain definite quantities by weight and measure:—

### SOLID MEASURE.

| | | |
|---|---|---|
| ℔ (libra) | represents | a pound = 12 ounces = 5760 grains. |
| 1℔ (libræ) | " | pounds. |
| ℥ (uncia) | " | an ounce = 8 drachms = 480 grains. |
| ʒ (drachma) | " | a drachm = 3 scruples = 20 grains. |
| ℈ (scrupulum) | " | a scruple =20 grains. |
| gr (granum) | " | a grain. |

### FLUID MEASURE.

| | | |
|---|---|---|
| C (congius) | represents | a gallon = 8 pints = 231 cubic inches. |
| O (octarius) | " | a pint = 16 fluid ounces. |
| fl ℥ (uncia fluida) | " | an ounce = 8 fluid drachms. |
| fl ʒ (drachma fluida) | " | a drachm = 3 fluid scruples. |
| fl ℈ (scrupulum fluidum) | " | a scruple = 20 minims. |
| ♏ (minimum) | " | a minim. |

The following abbreviations are in constant use:—$\overline{aa}$ or $\overline{AA}$ for ana (ανα) *utriusque*, of each; *ss* for semissis. Sesqui signifies one and a half.

At the end of the prescription the directions are written in Latin in some such form as that given above, as to how the medicine is to be used, and the date is annexed. No matter what ridicule may be thrown on the practice of prescribing in Latin, I am persuaded that there are many circumstances in which it is highly useful and conducive to the best interests of patients. I recommend you, therefore, to cultivate a sufficient knowledge of Latin to enable you to prescribe with facility and correctness, and to give your directions fully, clearly, and implicitly. If, however, you are not sufficiently master of the classic tongue to enable you to write in it with freedom and correctness, it is better to trust to the vernacular English than run the risk of mistake.

Though no advocate for the *polypharmacy* of past days, I cannot recommend the careless and crude prescriptions too often passing current in the present day. The prescription of the classic days of medicine was framed on a definite plan, and comprised several elements, the principal of which are the following, which I conceive may be still retained with advantage in our method of prescribing. The chief medicine employed was known as the *agens*, or agent, otherwise called *basis*, or the base; a medicine capable of increasing the activity of the base was denominated the *adjuvans*, or adjuvant; the *diluens*, or diluent, was the name given to any preparation which helped to dilute either or both of the foregoing; while the *corrigens*, or the corrigent, was that which corrected any deleterious quality of the *basis* or the *adjuvans;* the medium in which the whole was suspended was known as the *vehiculum*, or vehicle. The following formula for a purgative draught will illustrate the part played by each of the foregoing elements in a classic prescription *secundum artem*:—

℞

| | |
|---|---|
| Tartratis Potassæ ʒ i | (*agens v. basis*, agent or base). |
| Tincturæ Jalapæ ʒ i | (*adjuvans*, or adjuvant). |
| " Sennæ Compositæ ʒ iii | (*diluens*, or diluent). |
| Syrupi Zingiberis ʒ i | (*corrigens*, or corrigent). |
| Aquæ menthis piperitæ ℥ i | (*vehiculum*, or vehicle). |

M.

Fiat haustus statim sumendus.

It is by no means necessary that all these elements should enter into every prescription; as a rule, prescriptions should be as simple as possible, consistently with efficacious action and masking the unpleasant effects of certain drugs.

The following abbreviations are in constant use, in writing prescriptions and in giving directions for the manner of using medicines:—

$\overline{\text{AA}}$, $\overline{\text{aa}}$, (*ανα*), utriusque, of each.
Ad lib., ad libitum, at will.
Aq., aqua, water.
C., congius, a gallon.
Cochl., cochleare, a spoonful.
D. P., deaureantur pilulæ, let the pills be gilded.
Ft., fiat, let it be made.
Gr., granum, a grain.
H. S., hora somni, at hour of sleep.
O., octarius, a pint.
P. Æ., partes æquales, equal parts.
Pol., pollices, inches.
P. r. n., pro rê nata, as occasion requires.
S. a., secundum artem, according to the rules of art.
Sing., singulorum, of each.
Ss., semissis, half.
Stat., statim, immediately.
St., sumat, let him take.
V. S., venesectio, bleeding.

Numbers are so constantly written incorrectly, that I think the subjoined table will be found useful to students desirous of learning to write Latin with accuracy :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ½ | | Semissis, is, *m.* (*abbr.* ss.) | | | | | |
| 1 | I. | Unus, a, um.; *gen.* unius. | 1st | Primus, a, um | Once | Semel | (indeclin.) |
| 2 | II. | Duo, æ, o; *gen.* duorum, arum, orum; *dat. and abl.* duobus, abus, obus; *accus.* duos, as, o. | 2nd | Secundus " | Twice | Bis. | " |
| 3 | III | Tres, ia, ium, ibus. | 3rd | Tertius, a, um | 3 times | Ter | " |
| 4 | IV. | Quatuor (indeclin.) | 4th | Quartus " | 4 times | Quater | " |
| 5 | V . | Quinque " | 5th | Quintus " | 5 times | Quinquies | " |
| 6 | VI. | Sex " | 6th | Sextus " | 6 times | Sexies | " |
| 7 | VII. | Septem " | 7th | Septimus " | 7 times | Septies | " |
| 8 | VIII. | Octo " | 8th | Octavus " | 8 times | Octies | " |
| 9 | IX. | Novem " | 9th | Nonus " | 9 times | Nonagies | " |
| 10 | X. | Decim " | 10th | Decimus " | 10 times | Decies | " |
| 11 | XI. | Undecim " | 11th | Undecimus " | 11 times | Undecies | " |
| 12 | XII. | Duodecim " | 12th | Duodecimus, a, um | 12 times | Duodecies | " |
| 13 | XIII. | Tredecim " | 13th | Decimus tertius, a, um | 13 times | Terdecies | " |
| 14 | XIV. | Quatuordecim " | 14th | Decimus quartus " | 14 times | Quatuordecies | " |
| 15 | XV. | Quindecim " | 15th | Decimus quintus " | 15 times | Quindecies | " |
| 16 | XVI. | Sexdecim " | 16th | Decimus sextus " | 16 times | Sexdecies | " |
| 17 | XVII. | Septendecim " | 17th | Decimus septimus " | 17 times | Septendecies | " |
| 18 | XVIII. | Octodecim " | 18th | Decimus octavus " | 18 times | Octodecies | " |
| 19 | XIX. | Novendecim<br>Undeviginti " | 19th | Decimus nonus " | 19 times | Novendecies | " |
| 20 | XX. | Viginti " | 20th | Vicesimus, a, um | 20 times | Vicies | " |
| 21 | XXI. | Unus et viginti " | 21st | Vicesimus primus " | | | |
| 22 | XXII. | Viginti duo " | 22nd | Vicesimus secundus " | | | |
| 30 | XXX. | Triginta " | 30th | Tricesimus a, um | | | |
| 40 | XL. | Quadraginta " | 40th | Quadragesimus, a, um | | | |
| 50 | L. | Quinquaginta " | 50th | Quinquagesimus " | | | |
| 60 | LX. | Sexaginta " | 60th | Sexagesimus " | | | |
| 70 | LXX. | Septuaginta " | 70th | Septuagesimus " | | | |
| 80 | LXXX. | Octoginta " | 80th | Octogesimus " | | | |
| 90 | XC. | Nonaginta " | 90th | Nonagesimus " | | | |
| 100 | C. | Centum " | 100th | Centesimus " | 100 times | Centies | " |
| 200 | CC. | Ducenti | 200th | Ducentesimus " | | | |
| 500 | D. | Quingenti | 500th | Quingentesimus " | 500 times | Quingenties | " |
| 1000 | M. | Mille | 1000th | Millesimus " | 1000 times | Millies | " |

| | |
|---|---|
| A.D. | Anno Domini. |
| Annus, i; m. | Year. |
| Mensis, is; m. | Month. |
| Hebdomada, æ; f. | Week. |
| Dies, ei; m. | Day. |
| Nox, noctis; f. | Night. |
| Nocte (abl.) | At night. |
| Mane; n. (indeclin.) | Morning. |
| Meridies, ei: m. | Midday. |
| Meridie (abl.) | At midday. |
| Vesper, eris; f. | Evening. |
| Vespere, *v. i.* | At evening. |
| Media nox | Midnight. |
| Mediâ nocte | At midnight. |

| MENSES. | MONTHS. |
|---|---|
| Januarius, i; m. | January. |
| Februarius, i; m. | February. |
| Martius, tii; m. | March. |
| Aprilis, is; m. | April. |
| Maius, i; m. | May. |
| Junius, ii; m. | June. |
| Julius, ii; m. | July. |
| Augustus, i; m. | August. |
| September, bris,; m. | September. |
| Octōber, ōbris; m. | October. |
| November, bris; m. | November. |
| December, bris; m. | December. |

| DIES HEBDOMADÆ. | DAYS OF THE WEEK. |
|---|---|
| Dies Solis | Sunday. |
| Dies Lunæ | Monday. |
| Dies Martis | Tuesday. |
| Dies Mercurii | Wednesday. |
| Dies Jovis | Thursday. |
| Dies Veneris | Friday. |
| Dies Saturni | Saturday. |

| TEMPORA. | THE SEASONS. |
|---|---|
| Ver, ēris; n. | Spring. |
| Æstas, atis; f. | Summer. |
| Autumnus, i; m. | Autumn. |
| Hyems, is; m. | Winter. |

N.B.—In entering a day and date, the Latin word for day is always put in the ablative case; "datum," signifying "given" or "dated on," being understood: thus, "Monday the 25th of March," is written in Latin, "Die Lunæ vicesimo quinto Martii."

# GLOSSARY.

N. B. Nouns ending in *a* are feminine, and declined like *musa, æ*, except when a different gender and declension are given.

$\overline{\text{AA}}$, $\bar{\text{a}}$a, for ανα. *Of each.*

Abortus (*aboriri* or *obortare*, to miscarry). *Abortion.*

Acephalocystis (α, not, κεφαλη, a head, κυστις, a bladder). *Hydatid.*

Acne (ακνη, vigour?) *Disease of skin.* Class Pustulæ.

Acoustic (ακουω, I hear). *Of or belonging to hearing.*

Aidoici (αιδοια, pudenda). *Genetic diseases*, p. 10.

Ægophony (αιξ, a goat, φωνη, voice). *Shrill, trembling voice* (heard in pleurisy).

Albuminuria (*albumen* and ουρον, urine). *Presence of albumen in urine.*

Alcoholismus, i, m. *Alcoholism.*

Algīdus, a, um. *Cold.*

Alveolar (*alveus*, a cavity). *Hollow.*

Amenorrhœa (α, not, μην, month, ρεω, I flow). *Absent or defective menstruation.*

Amphoric (αμφορα, a jar). *Jar-like.*

Anæmia (α, not, αιμα, blood). *Impoverished blood.*

Anæsthesia (α, not, αισθανομαι, I perceive). *Loss of sensation.*

Aneurysma, atis, n. (ανευρυνω, I dilate). *Aneurysm.*

Angina (αγχω, *angere*, to choke). *Painful choking sensation.*

Angina pectoris. *Painful spasms of chest.*

Anorexia (α, not, ορεξις, appetitite). *Loss of appetite.*

Anthrax, acis, m. (ανθραξ, a coal). *A carbuncle.*

Aortitis. *Inflammation of the aorta.*

Apoplexia (απω, away, πλησσω, I strike). *Apoplexy.*

Aphthæ (απτω, I inflame). *The thrush, curd-like sloughs of the mucous membrane.*

Arteria (αηρ, air, τερεω, I hold). *Artery.*

Arteritis. *Inflammation of an artery.*

Arthritis (αρθρον, a joint). *Inflammation of the joints.*

Ascaris lumbricoides (ασκαριζω, I leap). *Round worm.*

Ascaris vermicularis. *Thread-worm.*

Ascites (ασκον, a bladder). *Dropsy of the belly.*

Asphyxia (α, not, σφυξις, pulse). *Pulselessness, suspended animation from nonarterialisation of the blood.*

Asthenia (α, not, σθενος, strength). *Want of strength.*

Asthma (ασθμα, laborious breathing). *A peculiar spasmodic disease of the lungs.*

Atelectasis (ατελης, imperfect, εκτεινω, I extend). *Imperfect distension with air of the lung substance in new-born children.*

Atheroma (αθηρα, pap or pulp). *Soft pulpy deposit.*

Atrophici (ατροφια, atrophy; α, not, and τροφη, food). *Diseases from want of nutrition*, p. 10.

Balneum, i, n. *Bath.*

Balneum calidum. *Warm bath.*

Balneum frigidum. *Cold bath.*

Balneum marinum. *Sea-water bath.*

Balneum tepidum. *Tepid bath.*

Balneum vaporis. *Vapour bath.*

Barometer (βαρος, weight, μετρον, measure).

Bronchiectasis (βρογχος, a bronchus, εκτεινω, I extend). *Dilatation of the bronchi.*

Bronchitis. *Inflammation of the bronchi.*

Bronchophony (βρογχος, a bronchus, or windpipe, φωνη, voice). *Voice heard through solid lung.*

Bronchocele (βρογχος, a bronchus, κηλος, tumour). *Tumour of thyroid gland.*

Bruit. (Fr.) *A noise.*.

Bruit de cuir neuf. *New leather sound.*

Bruit de diable. *Humming sound.*

Bruit de râpe. *Rasping sound.*

Bruit de scie. *Sawing sound.*

Bruit de soufflet. *Bellows sound.*

Bullæ. *Blebs.*

Butyrum (βους, cow, τυρος, cheese). *Butter.*

Cachectici (καχεξια, bad habit of body). *Cachectic diseases*, p. 10.

Cœna, æ, f. *Supper.*

Calculus, i, m. *Stone.*

Calor, ōris, m. *Heat.*

Calor mordax. *Biting heat.*

Cancer, cri, m (a crab). *Cancer.*

Cardiaci (καρδια, heart). *Heart diseases*, p. 10.

Cardiaci (καρδια, heart). *Inflammation of the heart.*

Carcinoma (καρκινος, a crab). *Cancer.*

Caries, ĭei, f. (rottenness). *Destructive process in bones.*

Caro, carnis, f. *Meat.*

Caro vitulina. *Veal.*

Caro bovilla. *Beef.*

Caro ovina. *Mutton.*

Catacausis (κατα, down, καιω, fut. καυσω, I burn) ebriosa. *Combustion of drunkards.*

Catamenia (κατα, down, μην, month). *The menses.*

Cataplasma, ătis, n. (καταπλασσειν, to besmear). *Poultice.*

Cephalici (κεφαλη, head). *Brain diseases*, p. 10.

Cerevisia, æ, f. *Porter.*

Chlorosis (χλωρος, pale green). *Green sickness.*

Cholera Anglica (χολη, bile). *English or bilious cholera.*

Cholera Asiatica. *Asiatic or true cholera.*

Chololithus (χολη, bile, λιθος, stone). *Gall-stones.*

Chorea (χορος, a dance). *Chorea, St. Vitus's dance.*

Chrotici (χρως, skin). *Skin Diseases*, p. 10.

Cicātrix, īcis, f. *A scar.*

Cirrhosis (κιρρος, yellow). *A contractile disease of organs.*

Climacteria (κλιμακτηρ, a step). *Turn of life.*

Clinical (κλινη, a bed). *At the bedside.*

Cochleare, āris, n. (*cochlea*, a snail's shell). *Spoon.*

Cochleare amplum. *Table-spoon.*

Cochleare medium. *Dessert-spoon.*

Cochleare parvum (v. infantis). *Teaspoon (infant's).*

Coma (κωμα). *Stupor with loss of sensation and volition.*

Constipatio. *Constipation.*

Convulsio. *Convulsions.*

Cor, cordis, n. (κηρ). *The heart.*

Cretinismus (*crétin*, Fr.) *Cretinism, idiotcy with deformity.*
Crepitus, i, m. *A crackling sound.*
Crisis (κρισις, decision). *Change.*
Cucurbitula. *Cupping-glass.*
Cucurbitulæ cruentæ. *Wet cupping.*
Cucurbitulæ sine ferro. *Dry Cupping.*
Culter, tri, m. *Knife.*
Cultellus, i, m. *Knife.*
Cyanosis (κυανος, azure). *Blue coloration of skin,* usually from imperfect septum of the heart.
Cyathus. *Wine-glass .*
Cystitis (κυστις, a bladder). *Inflammation of the bladder.*

Decubitus (*decumbĕre,* to lie down). *Position of lying down.*
Delirium, i, n. (*de* and *lira,* a furrow). *Delirium.*
Delirium tremens (*tremo,* I tremble). *Madness of drunkards, the "blue devils."*
Dementia (*de,* without, *mens,* mind). *Loss of reason.*
Dengue. *Rheumatic scarlatina.*
Dentitio. *Teething* (*dens,* a tooth).
Dermatophyta (δερμα, skin, φυτον, a plant). *A class of skin diseases.*
Diabetes (δια, through, βαινω, I go). *Excessive flow of urine.*
Diabetes Mellītus. *Same with sugar in urine.*
Diagnosis (δια, through, γιγνωσκω, I know). *The discrimination of diseases.*
Diaphoresis (δια, through, φερω, I bear). *Sweating.*
Diarrhœa (δια, through, ῥεω, I flow). *Looseness of the bowels.*
Diathetici (διαθεσις, condition). *Diathetic diseases,* p. 10.
Dietici (διαιτα, way of life). *Dietic diseases,* p. 10.
Diphtheria. *Diphtheria,* inflammation of the fauces.
Diuresis (δια, through, ουρον, urine). *Excessive flow of urine.*
Drachma, æ, f. *Drachm.*
Dracunculus draco (δρακων, a dragon), v. Filaria medinensis. *The Guinea worm.*
Dysenteria (δυς, difficult, εντερον, intestine). *Dysentery,* inflammation of the colon.
Dysenteria pustulosa. *Pustular dysentery,* inflammation of follicles of colon.
Dysmenorrhœa (δυς, difficult, μην, month, ῥεω, I flow). *Difficult, or painful menstruation.*
Dyspepsia (δυς, difficult, πεπτω, I digest). *Difficult digestion.*
Dyspnœa (δυς, difficult, πνοια, breath). *Difficulty of breathing.*

Echinococcus hominis. *Hydatid.*
Ecthyma (εκθυω, I break out). *Disease of skin.* Class Pustulæ.
Eczema (εκζεω, I pour out). *A vesicular eruption.*
Elephantiasis (ἰλεφας, an elephant) Arabica; Græcorum. *Leprosy of Moses.*
Embryo (εν, in, βρυω, I grow). *The germ.*
Emphysema (εν, in, φυσαω, I inflate). *Distended state of the pulmonary air-cells, also of other tissues, with air.*
Emplastrum, i, n. *A plaster.*
Emplastrum calefaciens. *A warming plaster.*
Emplastrum lyttæ. *A blister.*
Emplastrum roborans. *A strengthening plaster.*
Emplastrum vesicatorium. *A blister.*
Empyema (εν, in, πυς, pus). *Pus in the pleural cavity.*
Encephalitis (εν, in, κεφαλη, head). *Inflammation of the brain, &c.*
Encephaloïdes (εγκεφαλον, brain; ειδος, like). *Brain-like cancer.*
Endocarditis (ενδον, within, καρδια, heart). *Inflammation of lining membrane of heart.*
Enema, tis, n. (εν, in, ἱημι, I send). *An injection.*

Enema catharticum. *Purgative injection.*

Enema fœtidum. *Fœtid injection.*

Enema terebinthinæ. *Turpentine injection.*

Enema tabaci. *Tobacco injection.*

Enterica (εντερον, intestine). *Bowel diseases*, p. 10.

Enteritis (εντερον, intestine). *Inflammation of the intestines.*

Enthetici (ενθετος, put in). *Enthetic diseases*, p. 10.

Epilepsia (επιλαμβανω, fut. επιληψομαι, I seize upon). *Epilepsy.*

Ephelides (επι, on, ηλιος, the sun). *Freckles, liver spots.*

Epithelium, i, n (επι, on, θηλη, a nipple). *Epithelium.*

Epithelioma. *Epithelial tumour.*

Equinia (*equus*, a horse). *The glanders.*

Erysipelas (ερυω, I draw, πελας, near, or ερυθρος, red, πελλα, skin). *Erysipelas*

Erythema (ερυθρος, red). *Erythema.*

Exanthemata (εξ, out, ανθεω, I flourish). *Rashes.*

Exostitis, v. Exostosis (εξ, out, οστεον, bone). *Tumour on bone.*

Fatuitas. *Idiotcy.*

Febris, is, f. (*fervêre*, to be warm). *Fever.*

Febris a fame. *Famine fever.*

Febris continua. *Continued fever.*

Febris ephemeralis (επι, for, ἡμερα, a day). *One day fever.*

Febris eruptiva. *Eruptive fever*, as small-pox, &c.

Febris gastrica. *Fever with gastric symptoms.*

Febris intermittens. *Intermittent fever*, viz.

quotidiana. *Quotidian, or daily.*

tertiana. *Tertian, every second day.*

quartana. *Quartan, every third day.*

Febris maculata (*macula*, a spot). *Maculated fever.*

Febris miliaris (*milium*, millet). *Miliary or sweating fever.*

Febris perniciosa. *Pernicious fever.*

Febris petechialis. *Petechial, or maculated, or spotted fever.* Typhus.

Febris primaria. *Primary fever.*

Febris puerperarum (*puer*, a child, *pario*, bring forth). *Fever of lying-in women.*

Febris recurrens. *Relapsing fever.*

Febris remittens. *Remittent fever.*

Febris rheumatica. *Rheumatic fever, or Arthritis.*

Febris synocha. *Inflammatory fever.*

Febris synochus. *Mixed or nervous fever.*

Febris typhoides (τυφος, stupor). *Typhoid enteric fever.*

Febris typhus. *Spotted fever.*

Febris typhus icterodes. *Yellow fever.*

Floccitatio, onis, f. (*floccus*, the flock of wool). *Picking of the bed-clothes.*

Forfex, icis, f. *Scissors.*

Fragilitas ossium (*frangĕre*, to break). *Brittleness of the bones.*

Frambœsia. *The yaws, the sivvens.*

Frémissement cataire (Fr.). *Purring tremor*, like that of a cat.

Fremitus, ûs. *Vibration.*

Frottement (Fr.) *Sound of friction.*

Frustum, i, n. (a fragment). *Lunch.*

Fungus hæmatodes. *Bleeding cancer.*

Furfur, uris. *Bran, scurf.*

Furunculus, i, m. (*furĕre*, to be mad). *A boil.*

Gangræna (γαγγραινα). *Gangrene, mortification.*

Gangræna nosocomialis. *Hospital gangrene.*

Gangræna senilis. *Dry gangrene.*

Gargouillement (Fr.). *Gurgling sound.*

Gastralgia (γαστηρ, stomach, αλγος, pain). *Pain in the stomach.*

Gastritis (γαστηρ, the stomach). *Inflammation of the stomach.*

Geratici (γηρας, old age). *Diseases of old people*, p. 11.

Glossitis (γλωσση, the tongue). *Inflammation of the tongue.*

Gonorrhœa (γονη, semen, ῥεω, flow). *Purulent discharge from the urethra.*

Granum, i, n. *Grain.*

Gyniaci (γυνη, woman). *Diseases of women*, p. 10.

Hæmatemesis (αἱμα, blood, εμεσις, vomiting). *Vomiting of blood.*

Hæmaturia (αἱμα, blood, ουρον, urine). *Blood in urine.*

Hæmoptysis (αἱμα, blood, πτυω, I spit). *Spitting of blood.*

Hæmorrhage (αἱμα, blood, ῥεω, I flow). *Bleeding.*

Haustus, ûs, m. *Draught.*

Hepatitis (ἡπαρ, the liver). *Inflammation of the liver.*

Herpes (ἑρπω, I creep). *A vesicular eruption.* Class Vesiculæ.

Hirudo, inis, f. *Leech.*

Hydatid (ὑδωρ, ὑδατος, water). *A parasite resembling a sac of water.*

Hydrocele (ὑδωρ, water, κηλος, a tumour). *Watery tumour.*

Hydrocephalus (ὑδωρ, water, κεφαλη, head). *Hydrocephalus.* Water on the brain.

Hydrophobia (ὑδωρ, water, φοβος, fear). *Rabies*, from bite of infuriated animal.

Hydrops (ὑδωρ, water). *Dropsy.*

Hydrothorax (ὑδωρ, water, θοραξ, chest). *Water on the chest.*

Hypertrophia (ὑπερ, over, τρεφω, I nourish). *Hypertrophy.*

Hysteria (ὑστερον, the womb). *Hysterics.*

Hysteritis (same). *Inflammation of the womb.*

Icterus (ικτερος, a yellow bird). *Jaundice.*

Icthyosis (ιχθυς, a fish). *Scaly skin disease.* Class Squamæ.

Ileus (ειλεω, I twist). *Ileus*, passio iliaca, *painful twisting of the guts.*

Impetigo (*impeto*, I invade). *Disease of skin.* Class Pustulæ.

Index, icis. *A pointer, the forefinger.*

Influenza. *Influenza.*

Intussusceptio (*intus*, within, *suscipio*, I receive). *One portion of the intestine passing into another.*

Ischuria (ισχω, I restrain, ουρον, urine). *Difficulty of passing water.*

Jentaculum, i, n. *Breakfast.*

Keloid (κηλος, tumour). *Peculiar form of cancroid disease.*

Lanula, æ, f. (*lana*, wool). *Flannel.*

Laryngismus (λαρυγξ). *Laryngismus, a peculiar spasmodic disease of the larynx.*

Laryngismus stridulus. *Laryngismus, a peculiar crowing disease of the larynx.*

Laryngitis. *Inflammation of the larynx.*

Lentigo (*lens*, a lentil). *Freckle.*

Lepra. *Leprosy.*

Lepra tuberculosa. *True leprosy.*

Leucocythemia (λευκος, white, κυτος, a cell, αἱμα, blood). *White-cell-blood.*

Lichen, ēnis, m. *tetter. A skin disease.* Class Papulæ.

Ligula, æ, f. *Strap.*

Linteum, i, n. (*linum*, flax). *Lint.*

Lumbrīcus. *Smooth worm.*

Lupus. Noli me tangere (*lupus*, a wolf). *Lupus, a tubercular ulcerative disease.*

Macula. *A spot or stain.*

Malleus, i, m. *Hammer.*

Mania (μαινομαι, I am mad). *Madness.*
Melæna (μελας, black). *Passage of black matter by stool.*
Melanosis (μελας, black). *Blackish growth or deposit.*
Melasma (μελας, black) supra-renale, *Addison's disease.*
Meningitis (μηνιγξ, a membrane). *Inflammation of the membranes of the brain.*
Meningitis tuberculosa. *Tuberculous meningitis.*
Menorrhagia (μην, month, ῥεω, I flow). *Excessive menstruation.*
Mentagra (*mentum*, chin, αγρα, seizure). *Chin whelk, or Sycosis menti.*
Metamorphici (μετα, change, μορφη, form). *Developmental disease*, p. 10.
Metria, v. metritis (μητρα, womb). *Puerperal fever.*
Miasmatici (μιασμα, miasm). *Miasmatic diseases*, p. 10.
Mica, æ, f. *Crumb.*
Mica panis. *Crumb of bread.*
Miliaria (*milium*, millet-seed). *Miliary, or Sweating fever.*
Microscope (μικρος, small, σκοπεω, I see).
Mistura, æ, f. (*misceo*, to mix). *Mixture.*
Mollities ossium (*mollis*, soft). *Softness of the bones.*
Molluscum. *A skin disease.* Class Tuberculæ.
Monomania (μονος, alone, μανια, madness). *Derangement on a single idea.*
Monorganici (μονος, alone, οργανον, organ). *Local diseases*, p. 10.
Morbilli. *Measles.*
Mutitas. *Deaf-dumbness.*
Myelitis (μυελον, marrow). *Inflammation of the spinal marrow.*
Myocarditis (μυος, a muscle, καρδια, a heart). *Inflammation of the muscles of the heart.*
Myostici (μυς, muscle, οστεον, bone). *Bone and muscle diseases*, p. 10.
Nævus. *Skin mark.*
Necrosis (νεκρος, dead). *Death of bone.*
Necusia (Fr.). *Poisoned wound.*
Nephria (νεφρος, kidney). *Bright's disease.*
Nephritici (νεφρος, kidney). *Kidney diseases*, p. 10.
Nephritis. *Inflammation of the Kidney.*
Neuralgia (νευρον, nerve, αλγος, pain). *Tic douloureux.*
Neuroma (νευρον, nerve). *Tumour of nerve.*
Noma (*nomæ*, corroding sores). Canker.
Nosocomium, i, n. (νοσος, disease, κομεω, I take care of). *An hospital.*
Nosologia (νοσος, disease, λογος, word). *Classification of diseases.*

Obstipatio. *Constipation.*
Œdema, atis, n. (οιδημα, swelling). *Dropsy.*
Œdema glottidis. *Effusion into the areolar tissue of the glottis.*
Œsophagitis (οιω, οισω, I carry, will carry, φαγω, I eat). *Inflammation of the œsophagus.*
Offula carnis ovinæ. *Mutton chop.*
Offula suilla. *Pork chop.*
Ophthalmia (οφθαλμος, the eye). *Inflammation of the eye.*
Orchitis (ορχις, a testicle). *Inflammation of the testicle.*
Organoleptic (οργανον, an organ, λαμβανω, I seize). *Perceived by the senses.*
Ossium fragilitas. *Brittleness of the bones.*
Ossium mollities. *Softness of the bones.*
Ostitis (οστεον, a bone). *Inflammation of bone.*
Ovarii hydrops. *Dropsy of the ovary.*
Ovarii tumor. *Tumor of the ovary.*

Paidici (παιδιον, youth). *Diseases of children.*

Panis, is, f. *Bread.*

Papula, *a papule. Minute, elevated spot.*

Paralysis (παρα, by, λυω, I loose). *Paralysis, loss of power.*

Paralysis agitans. *Shaking palsy.*

Paramenia (παρα, by, μην, month). *Disordered menstruation.*

Parenchyma (ταρα, by, εν, in, χεω, I pour). *The interstitial substance of organs.*

Paronychia (παρα, by, ονυξ, the nail). *Whitlow.*

Parotia (παρα, by, ους, the ear). *The mumps.*

Parasitici (παρα, by, σιτος, food). *Parasitic diseases*, p. 10.

Partus, us, m. *Child-birth.*

Pathology (παθος, suffering, λογος, science). *The science of disease.*

Pectoriloquy (*pectus*, chest, *loquor*, I speak). *Voice as heard in lung cavity.*

Pediculus, i, m. (a pede). *A louse* or creeper.

Pediluvium, i, n. (*pes*, a foot, *luo*, I cleanse). *Foot-bath.*

Pellagra (*pellis*, skin, αγρα, seizure). *Pellagra, a skin disease.*

Pemphigus (πεμφιξ, a bubble). *A bullar eruption.* Class Bullæ.

Pericarditis (περι, around, καρδια, heart). *Inflammation of the investing membranes of the heart.*

Perityphlites (περι, around, τυφλον, the blind gut or cæcum). *Inflammation near cæcum.*

Peritonitis (πέρι, around, τεινω, I stretch). *Inflammation of the peritoneum.*

Peritonitis tuberculosa. *Tubercular peritonitis.*

Pertussis (*per*, intens., *tussis*, a cough). *Whooping-cough.*

Pestis. *The plague, a fever with carbuncles.*

Petechiæ. *Spots* (on the skin in Typhus).

Pharyngitis (φαρυγξ, pharynx). *Inflammation of the pharynx.*

Phiala, æ, f. *Bottle.*

Phthiriasis (φθειρ, a louse), v. Morbus pedicularis. *The lousy leprosy.*

Phlebitis (φλεψ, a vein). *Inflammation of veins.*

Phlegmon, onis, m. (φλεγω, I burn). *Inflammatory swelling.*

Phlyzacium, i, n. (φλυω, I swell over). *A pustule with red base.*

Phrenitis (φρην, mind). *Inflammation of the brain.*

Phthisici (φθισις, wasting). *Tubercular diseases*, p. 10.

Phthisis (same). *Consumption.*

Pilula, æ, f. *Pill.*

Pityriasis (πιτυρον, bran). *Skin disease.* Class Squamæ.

Pleuritis (πλευρον, a membrane). *Pleurisy.*

Pleuro-pneumonia (same, and πνευμων, lung). *Inflammation of the pleura and lungs.*

Pneumonia. *Inflammation of the lung-substance.*

Pneumonici (πνευμων, lung). *Lung diseases*, p. 10.

Pneumothorax (πνευμα, air, θωραξ, chest). *Air in pleural cavity.*

Poculum, i, n. *Cup.*

Podagra (πους, ποδος, foot, αγρα, seizure). *Gout.*

Pompholyx (πομφος, a bubble). *A bullar eruption.* Class Bullæ.

Pomum, i, m. *Apple.*

Porrigo. *Scald head.* Class Dermatophyta.

Prandium, ii, n. *Dinner.*

Prognosis (προ, before, γιγνωσκω, I know). *Knowledge of the results of disease.*

Prurigo (*prurio*, I itch). *Skin disease.* Class Papulæ.

Pruritus (same).

Psoriasis (ψωρα, itch). *Skin disease.* Class Squamæ.

Psydracium, i, n. (ψυδραξ, a white blister). *A simple pustule.*

Pulmo, ōnis, m. *The lung.*

Pulsus, ûs, m. (*pulso*, I beat). *The pulse.*
Pulsus ardens. *P. rising to the finger.*
Pulsus debilis. *Weak pulse.*
Pulsus dicrotus (δις, twice, κροτεω, to strike). *Double-beating pulse.*
Pulsus durus. *Hard pulse.*
Pulsus filiformis. *Thread-like pulse.*
Pulsus formicans. *Pulse creeping like ants.*
Pulsus fortis. *Strong pulse.*
Pulsus frequens. *Quick pulse.*
Pulsus intermittens. *Intermitting pulse.*
Pulsus lentus. *Slow pulse.*
Pulsus mallearis. *Hammer-like pulse.*
Pulsus mollis. *Soft pulse.*
Pulsus nervinus. *Irritative pulse.*
Pulsus normalis. *Regular pulse.*
Pulsus parvus. *Small pulse.*
Pulsus plenus. *Full pulse.*
Pulsus saltans. *Leaping or jerking pulse.*
Pulsus urinalis. *Urinal* (fanciful) *pulse.*
Pulsus vermicularis. *Worm-like pulse.*
Purpura. *The purples.*
Purpura hæmorrhagica. *Purpura with mucous hæmorrhages.*
Pustula, æ, f. *Pustule.*
Pustula maligna. *Malignant pustule.*
Pyæmia (πυς, pus). *Pyæmia.* (State resulting from absorption of pus.)
Pyrexia (πυρεσσω, I am hot). *The constitutional state of fever or inflammation.*
Pyrosis (πυρ, fire). *Water-brash, sour burning eructations, heartburn.*

Rabies, iei, f. *Hydrophobia.*
Rachitis (ῥαχις, spine). *The rickets.*
Radesyge. *The leprosy of Norway.*
Rheumatism (ῥευμα, catarrh).
Rhonchus, i, m. *A rattle or râle.*
Rigor, ōris, m. *Stiffness and coldness.*
Rigor mortis. *Stiffness of limbs after death.*
Roseola (*rosa*, a rose). *Rose-rash.*
Rubeola (*rubeo*, I am red). *Rubeola, compound of measles and scarlatina.*
Rupia (ῥυπος, filth). *A disease of the skin.* Class Bullæ.

Scabies, iei, f. (*scabĕre*, to scratch). *The itch.*
Scalprum, i, m. *Chisel.*
Scarlatina. *Scarlatina, scarlet fever.*
Scirrhus (σκιῤῥος, hard). *Hard cancer.*
Scorbutus, i, m. *Scurvy.*
Scrofula. *Strumous disease, king's evil.*
Scrupulum, i, n. *Scruple.*
Senectus, ūtis, f. *Old age.*
Serra, æ, f. *Saw.*
Somnus, i, m. *Sleep.*
Somnus altus. *Deep sleep.*
Sorbitio, onis, f. *Broth.*
Sorbitio ovilla. *Mutton broth.*
Sordes, is, f. *Filth, foul matter on teeth, lips, &c.*
Spasms clonic (κλονος, tumult). *Sudden, violent, and interrupted muscular contractions.*
Spasms tonic. *Continuous and sustained contractions.*
Spedalsked. *The leprosy of Norway.*
Splenitis (σπλην, the spleen). *Inflammation of the spleen.*
Sputum, i, n. *Expectoration.*
Squama. *A scale.*
Stertor (*stertĕre*, to snore). *Snoring noise.*
Stethoscope (στεθος, chest, σκοπεω, I view). *Instrument to explore the chest.*
Stomatitis (στομα, the mouth). *Inflammation of the mouth.*

Strongylus gigas (στρογγυλος, round). *Round worm of the intestines, lungs, &c.*
Struma. *Scrofulous disease.*
Sudamina. *Sweat vesicles.*
Sycosus menti (συκον, a fig). *Chin whelk* (from supposed resemblance to the fig).
Syncope (συν, with, κοπτω, I fall). *Fainting.*
Synocha (συν, with, εχω, I hold). *Continued inflammatory fever.*
Synochus (same). *Mixed fever.*
Synovia (συν, with, ωον, egg). *Fluid like white of egg.*
Synovitis. *Inflammation of lining membrane of joints.*
Syphilida. *Skin diseases resulting from syphilis.*
Syphilis (συς, a sow). *The venereal disease.*
Syrinx, ingis, m. (συριγξ, a pipe). *A syringe.*

Tabes mesenterica. *Wasting and inanition from strumous deposit in mesenteric glands.*
Tænia solium (ταινια, a fillet). *Tape-worm.*
Tetanus (τεινω, I stretch). *A disease with violent muscular spasms.*
Therapeutics (ϑεραπευω, I heal). *The science of healing.*
Thermometer (ϑερμος, warm, μετρον, measure).
Tonsilia. *Tonsilitis, quinsy.*
Trachealia (τραχυς, εια, rough). *Croup.*
Tuberculosis (*tuberculum*, a tubercle). *Tubercular disease.*
Tuberculosis mesenterica. *Same as tabes mesenterica.*
Tussis, is, f. *Cough.*
Tympanum, i, n. *A drum.*
Typhoïdes febris. *Enteric or typhoid fever.*
Typhus febris (τυφος, stupor). *Spotted, maculated, or petechial fever, Irish fever.*
Typhus icterodes. *Yellow fever.*

Urticaria (*urtīca*, a nettle). *Nettle-rash.*

Vaccinia (*vacca*, a cow). *Vaccine pustule.*
Valvula. *A Valve.*
Varicella. *Chicken pox.*
Varicocele (*varix* and κηλος, a tumour). *Swelling of a vein.*
Variola (*varus*, a pimple). *Small-pox.*
Varioloïdes. *Varioloid.*
Varix, ĭcis, m. *Varicose veins.*
Vermis, is, m. *Worm.*
Vesicula. *A vesicle.*
Viæ primæ (first ways or passages). *The stomach and intestines.*
Vibex, vībĭcis. *A purple stripe or mark.*
Vibrio, onis, f. (*vibrare*, to quiver). *An infusory animalcule.*
Vitiligo (*vitulus*, a calf). *Veal skin.*
Volucris, is, f. *A fowl.*
Volucris palustris. *Wildfowl.*

Zymotici (ζυμη, leaven). *Zymotic diseases*, p. 10.

# FORMS

FOR

# REPORTING CASES.

# CASE I.

Patient's Name________________________________

Age______________________Sex__________________

Trade or Condition______________________________

Date of Admission__________day of______________186

Admitted under_________________________________

Disease________________________________________

Illness commenced__________day of______________186

Illness terminated__________day of______________186

## I. HISTORY OF THE CASE.

Briefly but intelligibly record the result of inquiries under § 16 to § 19.

## II. STATE ON ADMISSION, OR FIRST EXAMINATION.

Record results of inquiries under § 20 to § 35, noting especially—

**1. General Moral and Physical Condition, § 6, and § 8 to § 15. Decubitus, § 7.**

**2. State of Cerebral Functions and Organs, § 21.**

## II. STATE ON ADMISSION, OR FIRST EXAMINATION—*continued.*

| **6. State of Primæ Viæ, Digestive and Urinary System, § 27 to § 30. Tongue, § 31. Stomach, § 33. Bowels, § 34. Urine, § 35.** | **5. State of General Cutaneous Functions, § 26.** | **4. State of Respiratory Functions, § 25.** | **3. State of Pulse and *general* Phenomena of the Circulation. §§ 22, 23, 24.** |
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II. STATE ON ADMISSION, OR FIRST EXAMINATION—*continued.*

**7. State of Thoracic Cavity and Organs, § 37 to § 124.**

## II. STATE ON ADMISSION, OR FIRST EXAMINATION—*continued.*

### 8. State of Abdominal Cavity and Organs, § 125 to § 203.

## II. STATE ON ADMISSION—*continued.*

**9. State of Cutaneous System, § 204 to § 218.**

10. Malformations and Wounds, or Injuries of any kind affecting the Head, Trunk, or Extremities.

## III. THERAPEUTICS. § 220.

**IV. DAILY PROGRESS OF THE CASE. § 221.**

IV. DAILY PROGRESS OF THE CASE—*continued.*

# CASE II.

Patient's Name____________________________

Age____________________Sex________________

Trade or Condition__________________________

Date of Admission__________day of_____________186

Admitted under______________________________

Disease__________________________________

Illness commenced__________day of_____________186

Illness terminated__________day of_____________186

## I. HISTORY OF THE CASE.

Briefly but intelligibly record the result of inquiries under § 16 to § 19.

## II. STATE ON ADMISSION, OR FIRST EXAMINATION.

Record results of inquiries under § 20 to § 85, noting especially—

**1. General Moral and Physical Condition, § 6, and § 8 to § 15. Decubitus, 7**

**2. State of Cerebral Functions and Organs, § 21.**

## II. STATE ON ADMISSION, OR FIRST EXAMINATION—*continued.*

**3. State of Pulse and *general* Phenomena of the Circulation. §§ 22, 23, 24.**

**4. State of Respiratory Functions, § 25.**

**5. State of General Cutaneous Functions, § 26.**

**6. State of Primæ Viæ, Digestive and Urinary System, § 27 to § 30. Tongue, § 31. Stomach, § 33. Bowels, § 34. Urine, § 35.**

II. STATE ON ADMISSION, OR FIRST EXAMINATION—*continued.*

**7. State of Thoracic Cavity and Organs, § 87 to § 124.**

II. STATE ON ADMISSION, OR FIRST EXAMINATION—*continued.*

**8. State of Abdominal Cavity and Organs, § 125 to § 203.**

## II. STATE ON ADMISSION—*continued.*

**9. State of Cutaneous System, § 204 to § 218.**

**10. Malformations and Wounds, or Injuries of any kind affecting the Head, Trunk, or Extremities.**

## III. THERAPEUTICS. § 220.

## IV. DAILY PROGRESS OF THE CASE. § 221.

IV. DAILY PROGRESS OF THE CASE—*continued.*

[illegible]

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[illegible]

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[illegible] ________ [illegible] ____________________ [illegible]

[illegible] ________ [illegible] ____________________ [illegible]

## I. HISTORY OF THE CASE.

Briefly but intelligibly record the result of inquiries under § 16 to § 19.

## II. STATE ON ADMISSION, OR FIRST EXAMINATION.

Record results of inquiries under § 20 to § 35, noting especially—

**1. General Moral and Physical Condition, § 6, and § 8 to § 15. Decubitus, § 7.**

**2. State of Cerebral Functions and Organs, § 21.**

## II. STATE ON ADMISSION, OR FIRST EXAMINATION—*continued.*

**3. State of Pulse and *general* Phenomena of the Circulation. §§ 22, 23, 24.**

**4. State of Respiratory Functions, § 25.**

**5. State of General Cutaneous Functions, § 26.**

**6. State of Primæ Viæ, Digestive and Urinary System, § 27 to § 30. Tongue, § 31. Stomach, § 33. Bowels, § 34. Urine, § 35.**

II. STATE ON ADMISSION, OR FIRST EXAMINATION—*continued.*

**7. State of Thoracic Cavity and Organs, § 37 to § 124.**

## II. STATE ON ADMISSION, OR FIRST EXAMINATION—*continued.*

### **8. State of Abdominal Cavity and Organs, § 125 to § 203.**

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